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CRPL-F 228 PART B

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PART B  
SOLAR - GEOPHYSICAL DATA

ISSUED  
AUGUST 1963

U. S. DEPARTMENT OF COMMERCE  
NATIONAL BUREAU OF STANDARDS  
CENTRAL RADIO PROPAGATION LABORATORY  
BOULDER, COLORADO



## SOLAR - GEOPHYSICAL DATA

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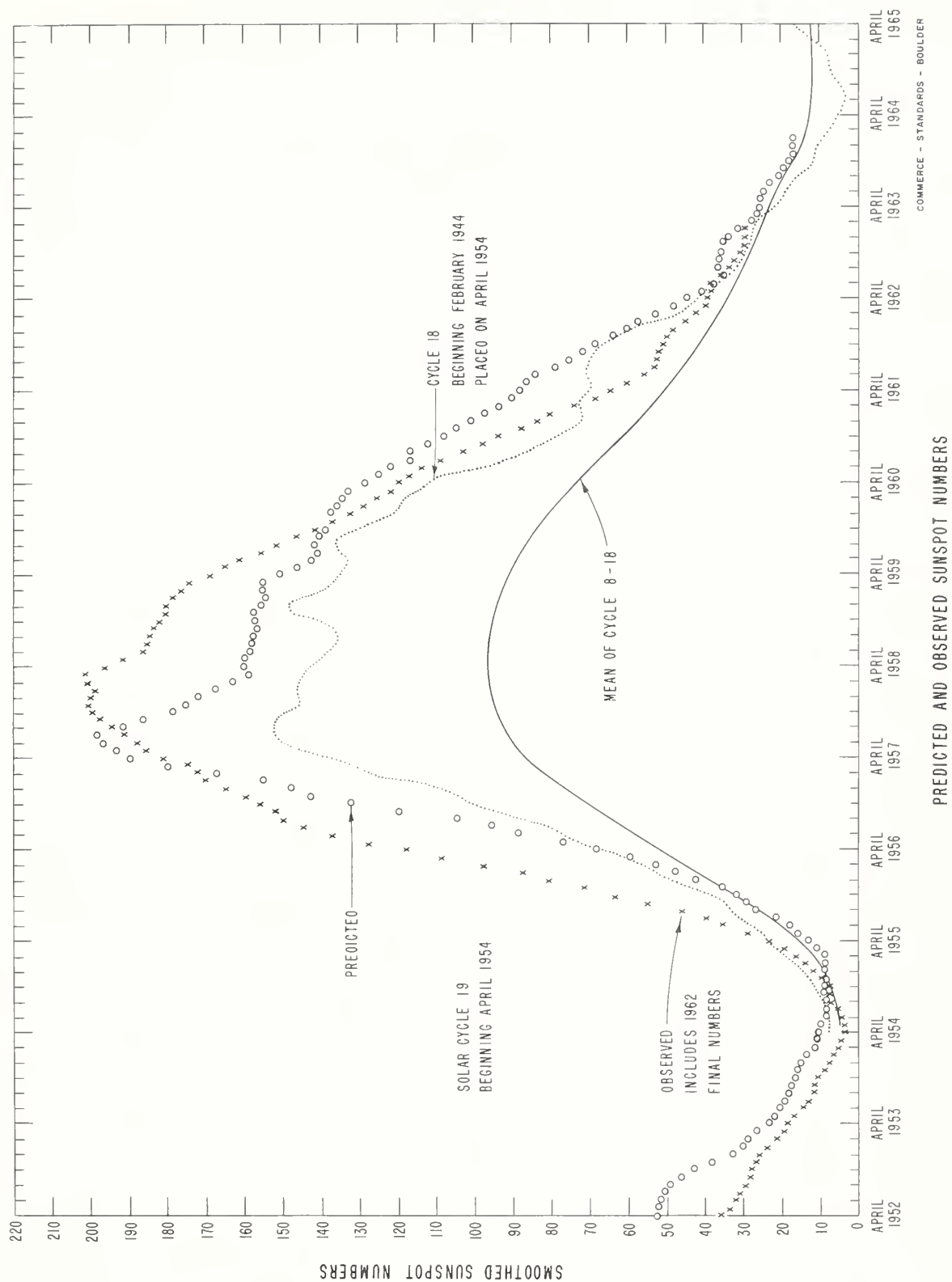
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The text describing the contents of Part B was republished in November 1962. A revision was made December 1962, and an addenda January 1963.

June 1963	American Relative Sunspot Numbers $R_A'$
1	30
2	21
3	8
4	5
5	10
6	11
7	25
8	60
9	70
10	77
11	56
12	61
13	55
14	40
15	37
16	29
17	24
18	17
19	14
20	16
21	6
22	1
23	15
24	19
25	24
26	27
27	30
28	34
29	29
30	32
Mean:	29.4

July 1963	Zürich Provisional Relative Sunspot Numbers $R_Z$	Daily Values Solar Flux at 2800 Mc, Ottawa, Canada Flux
1	25	76
2	21	77
3	37	78
4	19	78
5	9	78
6	9	77
7	9	77
8	10	77
9	17	77
10	9	76
11	10	75
12	10	74
13	18	76
14	22	77
15	19	76
16	11	76
17	11	74
18	16	74
19	15	74
20	11	77
21	19	75
22	19	73
23	25	72
24	17	72
25	25	74
26	9	73
27	17	74
28	7	73
29	24	77
30	55	84
31	65	85
Mean:	19.0	76.0



## CALCIUM PLAGE AND SUNSPOT REGIONS

JULY 1963

JULY 1963	LAT.	MCMATH PLAGE NUMBER	RETURN OF REGION	CALCIUM PLAGE DATA						SUNSPOT DATA		
				CMP VALUES		HISTORY	AGE (ROTA- TIONS)	DATE FIRST SEEN	DURA- TION (DAYS)	CMP AREA	VALUES COUNT	HISTORY
				AREA	INT.							
June 30.1*	S12	6871	New	(400)	(2.5)	b $\nearrow$ $\ell$	1	7/4	3			
30.8*	N33	6863	**	200	1.5	b - d	1	6/30	1			
July 1.7	S23	6864	**	200	1	b $\wedge$ d	1	6/30	2			
1.8	N14	6858	6821	1500	3.5	$\ell$ $\searrow$ $\ell$	3	6/25	13	60	1	$\ell$ $\searrow$ d
3.8	N24	6868	New	200	1	b - d	1	7/2	4			
4.1	S15	6862	6824	700	2	$\ell$ $\searrow$ d	4	6/28	11			
5.0	S13	6865	6824	700	2	$\ell$ $\searrow$ d	4	6/28	11			
7.1	N12	6869	6828	200	1.5	$\ell$ $\searrow$ d	3	7/2	5			
7.7	S10	6872	**	(400)	(2)	$\ell$ $\wedge$ d	1	7/9	2			
8.8	N31	6873	**	(100)	(1.5)	b $\searrow$ d	1	7/6	1			
9.6	N18	6870	6832	2400	3.5	$\ell$ $\nearrow$ $\ell$	3	7/3	13	200	1	$\ell$ - $\ell$
10.3	N09	6876	6833	200	1	b - d	3	7/5	9			
11.0	N06	6874	6833	500	2.5	$\ell$ $\nearrow$ d	3	7/5	9			
12.0	S13	6877	**	(200)	(1)	b - d	1	7/9	1			
12.6	S03	6880	**	200	2	b - d	1	7/11	1			
12.7	N11	6875	6834	1700	3	$\ell$ $\wedge$ $\ell$	3	7/6	13			
13.6	N01	6883	New	400	3	b $\nearrow$ $\ell$	1	7/13	7	(170)	(4)	b $\wedge$ d
15.6	S11	6878	**	(100)	(1)	$\ell$ - d	1	7/10	1			
15.8	N58	6884	**	(100)	(1.5)	b - d	1	7/13	1			
16.2	N08	6881	+									
16.9	N06	6879	New	(300)	(1)	$\ell$ - d	1	7/10	4			
16.9	S11	6882	**	300	1.5	b - d	1	7/12	1			
17.7	N04	6893	***	(300)	(2)	b $\searrow$ d	1	7/20	3			
18.3	N10	6885	New	(100)	(2)	b - d	1	7/13	4			
19.1	N29	6889	**	(200)	(1.5)	b - d	1	7/16	1			
19.3	S09	6886	**	(100)	(1.5)	$\ell$ - d	1	7/13	1			
20.1	N11	6887	6840	1000	2.5	$\ell$ $\wedge$ $\ell$	3	7/13	15			
20.1	S15	6890	***	(100)	(1.5)	b $\searrow$ d	1	7/16	3			
20.1	S07	6891	**	(200)	(2)	b $\wedge$ d	1	7/18	1			
21.4	N11	6888	6840	600	2	$\ell$ $\searrow$ $\ell$	3	7/13	15			
22.2	S03	6897	**	(400)	(2)	b $\searrow$ d	1	7/23	2			
22.8	S11	6904	**	(200)	(1.5)	b $\searrow$ d	1	7/26	2			
24.0	N14	6902	6858	500	1	$\ell$ $\wedge$ d	4	7/23	7			
24.2	N17	6900	***	300	1.5	b $\nearrow$ d	1	7/24	3			
24.4	S10	6898	***	400	1	b $\wedge$ d	1	7/23	3			
24.6	N33	6899	***	200	1.5	b $\nearrow$ d	1	7/23	3			
24.8	N01	6907	New	(300)	(3.5)	b $\nearrow$ $\ell$	1	7/27	5			
24.9	N12	6892	6854	2000	3.5	$\ell$ $\nearrow$ $\ell$	3	7/18	14	250	8	b $\wedge$ d
25.8	S01	6896	**	(300)	(2)	b - d	1	7/23	2			
25.9	N26	6894	***	(500)	(1.5)	b $\nearrow$ d	1	7/21	2			
26.3	N03	6895	***	(200)	(2)	b - d	1	7/22	3			
26.4	N28	6901	New	400	2	b - $\ell$	1	7/21	11			
28.2	N15	6905	++	400	1	b $\searrow$ $\ell$	1	7/26	9	70	3	b $\nearrow$ $\ell$
30.4	N13	6914	**	(400)	(2)	b - $\ell$	1	8/3	2			
31.1	S15	6906	6862	400	1.5	$\ell$ $\wedge$ d	5	7/25	11			
31.9	N04	6903	New	400	3	$\ell$ $\wedge$ d	1	7/26	11	(20)	(3)	b - d

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\* Additional data for June 1963

\*\* New but small and ephemeral

\*\*\* New but ephemeral

+ Region 6881 same as 6879

++ Region 6905 mostly new plage appearing on July 29, in same position as old 6858



# MT. WILSON MAGNETIC CLASSIFICATIONS OF SUNSPOTS

11b

JULY 1963

July 1963	Time Meas. UT	Lat.	Mer. Dist.	Type	July 1963	Time Meas. UT	Lat.	Mer. Dist.	Type
1	No Obs.				15	No Obs.			
2	2310	N11	W62	$\beta$	16	0045	N01	W32	$\beta$
					16	1655	N03	W43	$\alpha p$
3	1700	N08	W76	$\beta$	17	1820	N03	W56	$\alpha p$
3		N10	W71	$\alpha f$					
3		N12	E70	$\alpha p$	18-21	No Obs.			
4	No Obs.				22	1820	N10	E23	$\alpha p^{**}$
5	0035	N12	E53	$\alpha p$	23-25	No Obs.			
6	1640	N11	E32	$\alpha p$	26	0015	N09	W20	$\beta$
7	1635	N12	E12	$\alpha p$	27	No Obs.			
8	1710	N12	E06	$\alpha p$	28	0005	N02	W43	$\alpha$
9	1735	N12	W07	$\alpha p$	29	No Obs.			
9		N05	E10	$\beta$					
10	1815	N12	W21	$\alpha p$	30	0100	N12	W22	$\gamma$
							N11	E63	$\beta p$
11	No Obs.				30	1655	N12	W29	$\beta p$
12	1805	N12	W47	$\alpha p$			N11	E56	$\beta p$
							N11	E73	$\alpha p$
13	No Obs.				31	No Obs.			
14	0115	N13	W64	$\alpha p$					
14		N05	W04	$\beta \gamma^*$					
14	1910	N13	W74	$\alpha p$					
14		N05	W13	$\beta$					

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\* Two groups?

\*\* Follower developed several hours later.

Mt. Wilson daily observing hours between 1600 UT to 0200 UT.

# FINAL CORONAL LINE EMISSION INDICES

APRIL 1963

11c

CWP Apr 1963	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South West quadrant (observed 7 days later)				North West quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	6	7	28	36	13	31	17	22	34	53	5	14	9	11	9	16
2	7	8	24	28	9	20	13	19	15	21	x	x	18	23	x	x
3	16	20	2	4	6	11	0	0	x	x	4	5	x	x	3	5
4	x	x	x	x	x	x	x	x	26	92	x	x	36	62	x	x
5	49	109	24	36	9	14	22	28	x	x	x	x	x	x	x	x
6	54	101	22	32	4	6	17	38	25	64	21	26	85	108	26	40
7	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
8	37	53	2	9	12	16	5	7	36	61	x	x	61	95	x	x
9	x	x	x	x	x	x	x	x	27	32	x	x	28	30	x	x
10	8	11	14	18	2	3	17	23	x	x	x	x	x	x	x	x
11	x	x	13a	20a	x	x	17a	28a	x	x	x	x	x	x	x	x
12	x	x	11	15	x	x	25	32	x	x	x	x	x	x	x	x
13	x	x	x	x	x	x	x	x	42	58	18	50	16	41	x	18
14	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
15	17	23	5	6	21	46	23	36	x	x	x	x	x	x	x	x
16	x	x	x	x	x	x	x	x	15	25	37	40	35	53	27	40
17	36	64	5	10	9	11	9	14	x	x	x	x	x	x	x	x
18	41	101	x	x	4	6	x	x	x	x	x	x	x	x	x	x
19	x	x	x	x	x	x	x	x	14	22	9	12	44	117	5	8
20	58	83	18	25	18	28	18	20	x	x	20	44	x	x	17	24
21	x	x	x	x	x	x	x	x	7	8	15	18	9	11	12	23
22	43	53	x	x	31	36	x	x	4	5	19	23	5	7	17	27
23	7	8	x	x	1	3	x	x	20	23	x	x	17	21	30	38
24	x	x	x	x	x	x	x	x	24	28	23	25	18	23	27	29
25	x	x	x	x	x	x	x	x	4	6	19	22	5	7	21	30
26	x	x	x	x	x	x	x	x	x	x	20	26	x	x	20	28
27	x	x	x	x	x	x	x	x	10	14	20	22	9	11	21	24
28	12	14	3	7	19	35	3	7	10	14	15	24	12	20	15	24
29	x	x	x	x	x	x	x	x	11	17	20	36	8	11	17	24
30	10	14	12	20	6	11	14	18	15	19	10	11	33	38	11	12

x = no observations

\* = yellow line emission

a = index computed from low weight data

# FINAL CORONAL LINE EMISSION INDICES

MAY 1963

C.F. May 1963	North East quadrant (observed 7 days earlier)					South East quadrant (observed 7 days earlier)					South West quadrant (observed 7 days later)					North West quadrant (observed 7 days later)				
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>		G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>		G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>		G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	
1	x	x	x	x		x	x	x	x		14	17	13	15		51	62	12	14	
2	33a	73a	x	x		6a	14a	x	x		13a	20a	x	x		56a	98a	x	x	
3.	50	64	6	22		9	22	5	9		11	25	28	34		53	106	29	72	
4	x	x	19	28		x	x	13	32		12	25	28	32		55	126	21	28	
5	38	66	18	58		7	9	15	17		7	11	30	48		32	38	19	26	
6																				
7	27	36	21	28		4	11	15	16		21	48	x	x		13	17	x	x	
8	51	66	29	56		19	22	22	25		x	x	x	x		x	x	x	x	
9	20	24	24	30		15	16	23	26		19	31	33	40		16	34	27	44	
10	6	8	20	26		10	14	31	40		13	19	26	40		9	19	14	22	
	5	8	30	34		25	42	41	68		40	50	37	68		14	36	12	26	
11	12	14	21	26		71	123	36	68		65	88	15	20		7	16	5	10	
12	18	36	18	36		43	73	43	73		38	59	25	46		31	59	19	34	
13	25	39	26	30		27	56	34	52		31	67	28	34		47	90	36	71	
14	45	77	14	16		54	74	25	36		50	82	x	x		88	148	x	x	
15	46	69	10	14		40	90	31	40		x	x	x	x		x	x	x	x	
16	25	39	x	x		8	17	x	x		x	x	x	x		x	x	x	x	
17	21	36	11	13		5	11	16	24		11	14	2	7		32	51	11	24	
18	16	22	24	31		5	8	22	28		x	x	x	x		x	x	x	x	
19	30	89	34	44		2	6	16	22		17	37	10	12		37	65	16	28	
20	30	50	12	17		3	11	3	10		8	17	32	40		27	53	40	72	
21	x	x	x	x		x	x	x	x		4	7	27	36		9	11	35	44	
22	2	11	40	52		3	8	23	28		18	21	x	x		27	30	x	x	
23	6	7	21	28		5	6	16	24		7	11	24	27		12	20	21	26	
24	6	11	32	38		5	6	25	36		4	4	5	6		3	3	5	7	
25	13	16	10	32		14	18	0	0		2	4	5	8		2	3	7	13	
26																				
27	11	17	17	20		8	14	16	36		7	8	7	9		10	12	6	8	
28	18	22	21	44		15	31	29	64		7	13	31	52		25	50	6	28	
29	50	79	x	x		36	55	x	x		9	11	24	28		58	160	31	44	
30	x	x	x	x		x	x	x	x		5	7	7	8		14	21	12	20	
31	x	x	x	x		x	x	x	x		8	10	21	24		18	22	27	32	
	121	184	4	15		11	24	2	6		6	8	12	16		21	31	2	4	

x = no observations      \* = yellow line emission      a = index computed from low weight data

# FINAL CORONAL LINE EMISSION INDICES

JUNE 1963

He

CMP June 1963	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South West quadrant (observed 7 days later)				North West quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	x	x	x	x	x	x	x	x	8	11	9	11	19	31	2	9
2	17	25	8	10	13	15	10	14	10	12	13	16	14	20	12	16
3	24	56	28	40	25	50	30	40	7	12	12	16	25	45	12	28
4	21	46	29	56	16	22	26	40	18	25	16	24	31	73	13	20
5	70	137	x	x	42	53	x	x	23	42	24	30	18	36	17	20
6	27	67	18	37	27	48	14	16	38	67	20	30	11	22	27	36
7	5	6	7	10	13	20	6	12	x	x	x	x	x	x	x	x
8	4	4	8	16	3	5	3	11	39	73	12	28	16	22	12	16
9	15	26	5	6	12	15	7	8	16	24	11	20	16	29	8	12
10	19	35	17	28	14	19	28	36	40	62	27	36	45	87	15	48
11	53	98	36	70	21	28	31	40	x	x	x	x	x	x	x	x
12	13	18	7	10	7	9	12	16	8	31	20	28	57	101	21	36
13	48	67	28	44	6	8	28	32	9	25	23	32	68	104	25	36
14	62	112	9	16	6	11	7	20	12	28	18	24	81	154	15	28
15	71	120	17	32	9	14	9	14	11a	20a	23a	46a	33a	67a	26a	34a
16	21	35	20	30	6	12	16	20	8	11	21	24	17	28	19	24
17	18	24	21	34	9	21	18	28	5	9	19	36	7	8	26	32
18	11	20	24	27	6	11	11	16	11	14	27	33	7	20	31	35
19	7	11	19	24	5	8	14	16	23	26	5	6	17	21	4	5
20	6	11	22	28	8	14	21	24	7	11	17	20	15	48	30	44
21	x	x	x	x	x	x	x	x	3	7	9	12	7	12	9	11
22	6	14	13	25	2	8	6	12	9	11	12	12	13	19	12	16
23	8	21	13	30	3	3	8	12	17	24	16a	28a	27	46	28a	44a
24	25	59	13	48	7	8	11	28	5	6	8	11	17	30	10	16
25	x	x	x	x	x	x	x	x	14	20	14	22	24	42	19	30
26	31	49	13	16	10	17	11	13	6	11	x	x	18	34	x	x
27	35	50	8	11	5	6	21	28	9	20	x	x	41	95	x	x
28	30	50	17	16	8	11	18	20	x	x	27	40	x	x	27	52
29	x	x	20a	28a	x	x	18a	24a	5	8	29	36	22	25	36	44
30	22	28	13	16	6	8	21	40	6	8	13	20	17	36	12	20

x = no observations

\* = yellow line emission

a = index computed from low weight data

# PROVISIONAL CORONAL LINE EMISSION INDICES

JULY 1963

CMP Jul 1963	North East quadrant (observed 7 days earlier)				South East quadrant (observed 7 days earlier)				South west quadrant (observed 7 days later)				North west quadrant (observed 7 days later)			
	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>	G <sub>6</sub>	G <sub>1</sub>	R <sub>6</sub>	R <sub>1</sub>
1	10	15	12	32	6	6	16	50	x	x	x	x	x	x	x	x
2	62	>146	19a	24a	13	14	20a	25a	18	21	12	16	18	39	12	14
3	20	28	4	5	18	28	5	7	16a	25a	9	10	6a	8a	10	14
4	8	11	13	16	16	39	16	20	11	14	16	22	3	5	15	20
5	6	9	9	12	12	31	12	16	x	x	x	x	x	x	x	x
6	x	x	17	20	x	x	16	24	10	14	x	x	9	14	x	x
7	x	x	23a	28a	x	x	20a	24a	12	22	18a	23a	16	28	19a	24a
8	23	43	9	16	7	9	8	10	6	11	6	6	49	84	7	12
9	64	123	10	17	11	22	14	20	4	6	18a	24a	72	160	21a	30a
10	63	98	x	x	6	20	x	x	2	2	17	22	4	5	19	32
11	42	64	x	x	5	8	x	x	6	8	20	26	33	59	20	28
12	x	x	32a	36a	x	x	32a	36a	7	11	19a	36a	40	38	25a	36a
13	33	73	31	52	3	8	37	40	3	3	17	20	19	70	15	36
14	16	39	17	22	2	8	19	25	4	6	16	20	7	9	27	56
15	x	x	x	x	x	x	x	x	8a	11a	9	12	6a	8a	9	12
16	10	15	22	28	6	6	18	20	4	6	21	24	7	8	20	28
17	8a	8a	18	30	5a	6a	12	16	5	8	28	36	7	11	36	60
18	6	8	26	39	4	5	15	18	17	59	x	x	6	11	x	x
19	x	x	x	x	x	x	x	x	8	11	x	x	24	59	x	x
20	59	130	29	48	5	14	17	20	8	11	17	24	35	76	15	22
21	54	129	23a	32a	8	14	18a	24a	9	11	14	18	21	36	21	28
22	27	39	9	15	1	2	8	11	4	6	x	x	21	31	x	x
23	44	92	x	x	5	11	x	x	18	50	22	24	28	56	25	48
24	7	12	14	32	2	3	10	13	7	15	18	24	33	53	15	28
25	58	101	17	36	8	17	10	12	3	4	x	x	7	1	x	x
26	37	59	24a	32a	7	11	28a	32a	5	5	10	12	14	22	11	16
27	7	12	16	20	4	6	13	14	x	x	x	x	x	x	x	x
28	9	18	10	14	4	5	13	15	9	12	x	x	20	12	x	x
29	24a	42a	6	8	13a	17a	6	8	6	7	6	10	7	3	10	13
30	10	17	17	24	11	17	20	24	7	12	8	11	7	3	10	11
31	9	15	20	24	10	19	15	18	9	10	11	15	8	3	9	10

x = no observations

\* = yellow line

a = index computed from low weight data

COMMERCE - STANDARDS - BOULDER

# SOLAR FLARES

## JULY 1963

OBSERVATORY	DATE	OBSERVED TIME			LOCATION			DURA- TION — MINUTES	IN- POR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX PHASE	APPROX LAT	MER DIST	M-MATH FLARE REGION				TIME — U.T	MEAS. AREA Sq Deg.	CORR AREA Sq Deg	MAX WIDTH H <sub>o</sub>	
ATHENS	JULY 1963														
	01	0200	0400	NO FLARE	PATROL										
	01	0405	0420	NO FLARE	PATROL										
	01	0425	0430	NO FLARE	PATROL										
	01	0450	0545	NO FLARE	PATROL										
LOCKHEED	01	0634	0636		N13 W02				1-	2	1917	.70	1.00		10
	01	1907	1931	1917	N14 E08				1-	2	1917	.50	.50		
	01	1908	1946	1917	N15 E08		6858		1-	2	1917	.70	.70		
	02	0035	0120	0045	N14 W02				1-	2	0045	.30	.30		10
	02	0220	0245	NO FLARE	PATROL										
HONOLULU	02	0255	0400	NO FLARE	PATROL										
	02	0405	0455	NO FLARE	PATROL										
	02	0505	0540	NO FLARE	PATROL										
	02	0545	0600	NO FLARE	PATROL										
	02	2108	2120	2114	N11 W60		6854		1-	3	2114	.31	.49		
LOCKHEED	02	2115	2215	2134	N09 W63				1-	2	2134	.40	.40		10
	02	2122	2156	2140	N11 W60		6854	34	1+	3	2140	2.70	4.20		
	02	2127	2152	2132	N10 W63				1-	2	2132	.72	1.13		16
	02	2128	2146	2129	N11 W62		6854		1-	2	2129	.30	.60		
	03	0220	0600	NO FLARE	PATROL										
MANILA	03	0532	0551		N07 W67		6854	19	1	2					
	03	1023	1028	0	N09 W72				1-	2	1453	1.50	3.60		
	03	1453	1512		N13 W65		6854	19 D	1	2	2108	.52	1.13		
	03	2106	2112	2108	N11 W75				1-	3	2318	.62	1.40		
	03	2300	2320	2318	N08 W75				1-	2	2320	.40	1.20		10
LOCKHEED	03	2308	2338	2320	N11 W66										
	04	0225	0450	NO FLARE	PATROL										
	04	0340	0352	0345	N08 W74				1-	2					
	04	0545	0549	0547	N07 W78		6854	14	1	1					
	04	0734	0748	0740	N06 W74		6854	11	2	2					
ATHENS	04	0736	0747		N10 W80		6854	21	0	1	0739	1.70	5.30		
	04	0739	0800		N10 W84		6854	17	0	1	1242	.90			
	04	1240	1257	0	N10 W90		6854	13	0	1	1244	1.00	3.90		
	04	1242	1300	1244	N10 W90		6854	15	0	3	1246	1.05			
	04	1246	1259		N08 W86		6854	15	0	3	1442	9.10	2.40		
SALT'SJOBACH	04	1255	1310	0	N05 W90		6854	28	2	1	1442	1.20	2.40		
	04	1434	1502	1442	N14 E60		6870	34	1	1	1643	.20	.40		10
	04	1436	1510	1443	N16 E63		6870		1-	2	1832	.90	1.80		
	04	1828	1840	1832	N11 E59				1-	1	1900	.20	1.00		10
	04	1845	1920		N13 E62		6870		1-	2	1857	.31	1.10		
LOCKHEED	04	1854	1902	1857	N10 W90				1-	3	1857	.20	1.00		
	04	1856	1906	1858	N10 W90				1-	3	1858	.31	1.10		
	05	0200	0450	NO FLARE	PATROL										
	05	1005	1034		N11 E51		6870		1-	2	1008	.40	.60		
	05	1725	1744	1732	N06 E50				1-		1732	.20	.30		
HAUTE-PROV	06	0215	0415	NO FLARE	PATROL										
	06	0420	0455	NO FLARE	PATROL										
	07	0100	0105	NO FLARE	PATROL										
	07	0200	0525	NO FLARE	PATROL										

# SOLAR FLARES

## JULY 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION -- MINUTES	IM- POR- TANCE	OBS COND.	TIME -- U T	MEASUREMENTS			MAX WIDTH He	MAX INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER DIST	MCNATH PLACE REGION					MEAS. AREA Sq Deg	COBR. AREA Sq Deg	MAX INT. %			
HONOLULU	JULY 1963															
	07	0540	0600	NO FLARE	PATROL											
	07	1135	1140	NO FLARE	PATROL											
	07	1835	1850	NO FLARE	PATROL											
	08	0200	0550	NO FLARE	PATROL											
	08	2318	2330	2332	N16 E04			1-	2	2322	.62	.62				
	09	0205	0345	NO FLARE	PATROL											
	09	0400	0510	NO FLARE	PATROL											
	09	0530	0535	NO FLARE	PATROL											
	10	0200	0210	NO FLARE	PATROL											
10	0225	0250	NO FLARE	PATROL												
10	0425	0440	NO FLARE	PATROL												
ATHENES	11	0200	0205	NO FLARE	PATROL											
	11	0215	0235	NO FLARE	PATROL											
	11	0435	0515	NO FLARE	PATROL											
	11	0525	0530	NO FLARE	PATROL											
	11	0641	0645	NO FLARE	N13 W29			1-	2		1.00	1.20				
	11	1050	1100	NO FLARE	PATROL											
	12	0205	0230	NO FLARE	PATROL											
	12	0315	0320	NO FLARE	PATROL											
	12	0340	0455	NO FLARE	PATROL											
	12	2325	2400	NO FLARE	PATROL											
CAPRI S. HONOLULU LOCKHEED	13	0230	0310	NO FLARE	PATROL											
	13	0320	0330	NO FLARE	PATROL											
	13	0725	0755		N05 E08			1-	3	0736	1.80	1.80				
	13	2100	2118	2110	N12 W59			1-	3	2110	.83	1.30		10		
	13	2320	2350	2330	N00 W04			1-	2	2330	.30	.30				
	14	0220	0235	NO FLARE	PATROL											
	14	0405	0455	NO FLARE	PATROL											
	15	0205	0600	NO FLARE	PATROL											
	15	0728	0741		N05 W25			1-	2		1.00	1.10				
	ATHENES LOCKHEED SAC PEAK MCNATH SAC PEAK LOCKHEED MCNATH LOCKHEED	15	1821	1833	1825	N01 W30			1-	2	1825	.30	.30		10	
15		1822	1827	1824	N02 W32			1-	2		.39	.41		14		
15		1822	1830	1825	N03 W31	6883		1-	2	1825	.30	.30		15		
15		2055	2110	2058	N02 W33			1-	2		.45	.47		15		
15		2055	2111	2058	N02 W31			1-	2	2058	.30	.30		10		
15		2056 E			N03 W32	6883		1-	1	2056	.30	.30		10		
15		2141	2150	2144	N03 W33	6883		1-	2	2144	.20	.20		10		
15		2305	2315	2310	N03 W35			1-	2	2310	.20	.20		10		
16		0200	0455	NO FLARE	PATROL											
LOCKHEED		17	0200	0415	NO FLARE	PATROL										
	17	0425	0445	NO FLARE	PATROL											

# SOLAR FLARES

## JULY 1963

OBSERVATORY	DATE JULY 1963	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. LONG.				TIME UT	MEAS. AREA Sq Deg	CORE AREA Sq Deg	MAX WIDTH IN	MAX INT %
MANILA	18	0225	0320	NO FLARE	PATROL		1-	1					
	18	0445	0600	NO FLARE	PATROL								
	18	0828 E	0837	NO FLARE	N07 W65								
	19	0205	0235	NO FLARE	PATROL								
OTTAWA	19	0325	0355	NO FLARE	PATROL								
	19	0430	0445	NO FLARE	PATROL								
	19	1041	1056	1046	N10 E74								
	19	1043	1051		N09 E77		1-	1	1046	.41	.88		
HAUTE-PROV LOCKHEED	19	2320	0050 D	2345	N09 E68		1-	1	2345	.20	.60		10
	19	2320	0050 D	0025	N09 E68		1-	2					
	20	0210	0235	NO FLARE	PATROL								
	20	0450	0550	NO FLARE	PATROL								
MANILA	20	1105	1125	NO FLARE	PATROL								
	21	0205	0225	NO FLARE	PATROL		1-	1					
	21	0420	0424	0421	N09 E35								
	21	0425	0440	NO FLARE	PATROL								
HAUTE-PROV MCMATH	21	0540	0550	NO FLARE	PATROL								
	22	0200	0330	NO FLARE	PATROL								
	22	0335	0500	NO FLARE	PATROL								
	23	0205	0245	NO FLARE	PATROL								
MCMATH	23	0425	0445	NO FLARE	PATROL								
	23	0522	0537 D		N09 E21		1-	1	0525	.30	.40		
	23	2127	2141 D	2129	N09 E12		1-	1	2129	.20	.20		
	24	0205	0510	NO FLARE	PATROL								
MCMATH LOCKHEED	24	1229	1245	1231	N10 E03		1-	1	1231	.30	.30		
	24	1808	1832	1815	N09 W01		1-	2	1815	.20	.20		10
	24	2227	2235	2231	N09 W02		1-	1	2231	.30	.30		
	24	2230	2240	2232	N08 W02		1-	1	2232	.83	.83		
HONOLULU	24	2300	2320	2304	N09 W02		1-	1	2304	1.96	1.96		
	24	2301	2313 D	2304	N09 W03		1-	1	2304	.50	.50		
	24	2302	2313 D	2304	N09 W03		1-	2		.93	.93		18
	25	0045	0050	NO FLARE	PATROL								
HONOLULU MANILA	25	0110	0116 D	0112	N10 W03		1-	1	0112	.62	.62		
	25	0110 E	0117	0111	N10 W03		1-	2	0111	1.00	.98		
	25	0125	0130	NO FLARE	PATROL								
	25	0140	0220	NO FLARE	PATROL								
WENDEL MCMATH	25	0230	0235	NO FLARE	PATROL								
	25	0315	0335	NO FLARE	PATROL								
	25	0405	0420	NO FLARE	PATROL								
	25	0440	0505	NO FLARE	PATROL								
WENDEL MCMATH	25	0515	0600	NO FLARE	PATROL								
	25	0824 E	0922 D	1607	N08 W10	58 D	1-	2	1607	.30	4.00		
	25	1606	1620		N10 W15	6892					.30		
	26	0055	0120	NO FLARE	PATROL								



# SOLAR FLARES

JULY 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	MEASUREMENTS				MAX. INT °	MAX WIDTH Ha	PROVISIONAL IONOSPHERIC EFFECT
		START	END	MAX. PHASE	APPROX. LAT.	MER. DIST.				MC-MATH PLACE REGION	TIME	MEAS. AREA Sq Deg	CORR. AREA Sq Deg			
BUCHAREST	JULY 1963															
	26	0155	0500	NO FLARE	PATROL			1-	2							
	26	0510	0520	NO FLARE	PATROL											
	26	0620	0711	D	N10 W25											
	26	1110	1115	NO FLARE	PATROL											
	26	2315	2400	NO FLARE	PATROL											
	27	0000	0005	NO FLARE	PATROL											
	27	0120	0220	NO FLARE	PATROL											
	27	0325	0455	NO FLARE	PATROL											
	28	0155	0505	NO FLARE	PATROL											
LOCKHEED	28	1755	1825	1810	N11 E80		6908	1-	2	1810	.50	.80		20		
	28	1803	1839	1808	N11 E88		6908	1-	3	1808	.20					
	28	1806	E	1816	D	N10 E90	6908	1-	3	1810	.32	1.10				
	28	1822	1830	1824	N10 E90			1-	3	1824	.20					
	28	1830	1855	1835	N11 E80			1-	3	1835	.20	.80		10		
	28	1858	1928	D	N09 E88		6908	1-	2	1906	.30					
	28	1945	2015	2000	N11 E80			1-	2	2000	.30	1.20		10		
	28	2110	2220	2117	N11 E80			1-	2	2117	.30	1.20		10		
	28	2110	2220	2140	N11 E80			1-								
	29	0105	E	0108	D	N08 W60			1-	1		.30	.50		10	
MANILA	29	0105	0117	0110	N13 W56			1-	2	0110						
	29	0150	0615	NO FLARE	PATROL											
	29	0415	0427	0419	N09 E75			1-	2	0419	1.50	3.30				
	29	0713	0731		N10 E80		6908	1-	2							
	29	0715	0717	0740	N13 E77		6908	1-	2		1.20	4.10				
	29	0715	E	0746	D	N12 E75	6908	31	D							
	29	0849	E	0855	D	N13 E79			2							
	29	1027	1050	D	N09 E79		6908	23	D							
	29	1030	1042		N09 E78			1-								
	29	1414	1600	D	N12 W16		6905	106	D	1428	4.00	4.70				
CAPRI S	29	1840	1920	1850	N02 E30			1-	3	1850	.60	.60		20		
	29	1843	1914	1848	N03 E28		6903	1-	2	1848	.60	.70				
	29	1950	2045	2000	N12 W20		6905	1-	2	2000	1.30	1.40				
	29	1951	2030	2002	N14 W19			1-	3	2002	1.40	1.40		20		
	29	2127	2215	2150	N14 W20			1-	3	2150	1.40	1.20		20		
	29	2131	2230	2144	N13 W22		6905	1-	2	2144	.90	1.00				
	29	2131	2230	2216	N13 W22			1-	2							
	29	2228	2315	2240	N14 W20			1-	2	2240	.40	.40		10		
	29	2236	2300	D	N13 W23		6905	1-	2	2247	.60	.60				
	30	0040	0110	0055	N14 W21			1-	2	0055	.40	.40				
LOCKHEED	30	0059	0108	0103	N13 W23			1-	2	0103	1.00	1.01		10		
	30	0204	0225	D	N14 W21			1-	2	0214	.60	.60		20		
	30	0211	E	0215	D	N13 W24	6905	1	1	0212	2.50	2.53				
	30	0225	0600	NO FLARE	PATROL											
	30	0530	0550	0537	N13 W25			1-	2	0537	1.00	1.02				
	30	0755	0826	D	N13 W25			1-	2	0805	.60	.70				
	30	0757	0816		N13 W27		6905	1-	3			5.00				
	30	0808	0814	0808	N12 W27			1-		0808	1.00	1.20				
	30	0808	0814	0808	N12 W27											
	30	0808	0814	0808	N12 W27											

COMMERCE - STANDARD - BOULDER

# SOLAR FLARES

## JULY 1963

OBSERVATORY	DATE JULY 1963	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	ONS COND.	TIME — UT	MEASUREMENTS		MAX WIDTH H <sub>0</sub>	MAX INT °	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. MER DIST	M-MATH PLAGE REGION				MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
HAUTE-PROV	30	0824 E	0828	N13 W27			1-		0826	.30	.30			
WENDEL	30	0810 E	0818 D	N12 E62			1-	2	0900	1.00	3.30			
ARCETRI	30	0900 E		N12 E81		6909	1-							
WENDEL	30	1024 E	1035 O	N12 W28			1-							
HAUTE-PROV	30	1107 E	1112 D	N13 W27			1-		1108	.50	.50			
MCMATH	30	1116	1156	N12 E63		6908	1-	2	1119	.20	.40			
MCMATH	30	1138	1210	N12 E81		6909	1-	2	1145	.10	.90			
WENDEL	30	1241 E	1253 O	N13 W29			1-							
MCMATH	30	1243	1256	N12 W30		6905	1-	1	1245	.30	.30			
HAUTE-PROV	30	1244	1258	N13 W27			1-		1247		1.00			
WENDEL	30	1418 E	1438 O	N13 W30			1-							
WENDEL	30	1450 E	1516 O	N13 W31			1-							
MCMATH	30	1458	1520	N12 W31		6905	1-	1	1505	.30	.30			
HAUTE-PROV	30	1507	1530	N13 W30			1-	1	1510	1.00	1.20			
MCMATH	30	1530	1540	N11 E58		6908	1-	1	1533	.50	1.00			
CAPRI S	30	1534	1552	N10 E60		6908	1-	2	1537	1.20	2.20			
CAPRI S	30	1540	1600 D	N12 E75			1-	2	1545	.50	.50			
CAPRI S	30	1547 E	1558	N13 W29			1-	1	1550	1.50	1.70			
MCMATH	30	1610	1618	N13 E77		6909	1-	1	1614	.20	1.00			
WENDEL	30	1724 E	1736 D	N12 W31			1-							
HONOLULU	30	1740 E	1752	N12 E73			1-	3	1740	.52	1.20			
LOCKHEED	30	1740	1810	N11 E59			1-	2	1750	.20	.40		10	
MCMATH	30	1800	1803 O	N11 E79		6909	1-	1	1802	.20	1.00			
LOCKHEED	30	1825	1840	N11 E78			1-	2	1830	.20	.60		10	
MCMATH	30	1830	1837	N11 E78		6909	1-	1	1834	.20	1.00			
HONOLULU	30	1832	1840	N11 E72			1-	3	1834	.41	.87			
MCMATH	30	1851	1905	N12 E78		6909	1-	1	1857	.20	1.00			
LOCKHEED	30	1854	1904	N11 E78			1-	2	1857	.20	.60		10	
HONOLULU	30	1856	1906	N12 E73			1-	3	1900	.41	.87			
LOCKHEED	30	1910	1925	N11 E78			1-	2	1915	.10	.30		10	
LOCKHEED	30	1920	1942	N11 E59			1-	2	1930	.20	.30		10	
HONOLULU	30	1922	1932	N02 W90			1-	3	1924	.31	.90			
LOCKHEED	30	2000	2045	N11 E59		6908	1-	2	2015	.20	.30		10	
MCMATH	30	2108	2127	N12 E57			1-	2	2113	.20	.40			
LOCKHEED	30	2113	2122 D	N11 E78			1-	2	2118	.30	.60		10	
HONOLULU	30	2116	2126	N08 E74			1-	3	2118	.83	1.90			
MCMATH	30	2243	2250 D	N10 E56		6908	1-	2	2245	.30	.60			
HONOLULU	30	2306	2314	N09 E74			1-	3	2308	.72	1.70			
	31	0010	0025	NO FLARE										
	31	0155	0220	NO FLARE		PATROL								
	31	0235	0300	NO FLARE		PATROL								
KOAIAKNL	31	0331	0335	0331		E68	1-	2	0331			1.40	100	
	31	0440	0445	NO FLARE		PATROL								
	31	0545	0605	NO FLARE		PATROL								
	31	0610	0620	NO FLARE		PATROL								
BUCHAREST	31	0650 E	0706 D	N14 E69			1-	2						
BUCHAREST	31	0725 E	0744 D	N12 E50			1-	2						
ISTANBUL	31	0745 E	0805 D	N11 W39		6905	2 D							
BUCHAREST	31	0745 E	0816 D	N13 W38		6905	31 D	3						
ATHENS	31	0751 E	0800 O	N12 W42			1-	3		.70	.90			

COMMERCE - STANDARDS - BULLDOG

# SOLAR FLARES

JULY 1963

OBSERVATORY	DATE JULY 1963	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS			PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	APPROX. NER. DIST.				MEAS. AREA Sq Deg.	CORR. AREA Sq Deg.	MAX WIDTH Ha	
HERSTMONCEU	31	0752	0830	N13 W38			1-	3	.90	1.10		
KODAIKUN	31	0756	E	N15 W38			1-	1	1.30	1.70		
BUCHAREST	31	0803	E	N12 E51			1-	2				
BUCHAREST	31	0910	E	N14 E68	6909	36 D	1-	3				
HERSTMONCEU	31	0912	E	N12 E50			1-	3	1.50	1.80		
CAPRI S	31	0922	E	N11 E49			1-	1	.75	1.10		
ARCETRI	31	0923	E	N12 E50			1-	3	1.00	1.60		
BUCHAREST	31	1002	E	N13 W37			1-	3				
BUCHAREST	31	1010	E	N12 E66			1-	3	.80	1.70		
ARCETRI	31	1016	E	N13 E68			1-	3	1.20	2.80		
CAPRI S	31	1017	E	N14 W40	6909	7 D	1	2				
BUCHAREST	31	1029	E	N14 W36	6905	14 D	1	3				
CAPRI S	31	1030	E	N15 W39			1+	1	1.80	2.30		
ARCETRI	31	1037	E	N12 E66			1-	3	.90	1.20		
MCWATH	31	1403	E	N11 W49			1-	2	.30	.40		10
LOCKHEED	31	2230	E				1-	2	.30	.40		10
LOCKHEED	31	2337	E				1-	2				
LOCKHEED	31	2355	E				1-	2				
ATHENS, GREECE				HONOLULU	HAWAII, USA			NERA				
PIRCULL, USSR				IKOMASAN	KYOTO, JAPAN							
ROYAL OBSERVATORY,				KIEV KO	KIEV GAO, USSR							
CAPE OF GOOD HOPE				KIEV KY	KIEV UNIVERSITY, USSR							
CAPRI, ITALY (GERMAN)				LOCKHEED	LOS ANGELES, CALIF., USA							
CAPRI, ITALY (SWEDISH)				MCWATH	MCWATH-HULBERT							
STHELZ, USSR					PONTIAC, MICH., USA							
ROYAL GREENWICH OBSERVATORY,				MOSCOU	MOSCOW-GAISH, USSR							
HERSTMONCEU, ENGLAND												
HAUTE-PROVENCE					NEW SCHAUM FREIBURG, CFR							
NETHERHORST den BERCH,												
NETHERLANDS												
KRASNAVA PAKHRA, USSR												
SAC PEAK												
SACRAMENTO PEAK, N.MEX. USA												
STOCKHOLM, SWEDEN												
SCHAUINSLAND, CFR												
TACHKENT, USSR												
WENDELSTEIN, CFR												

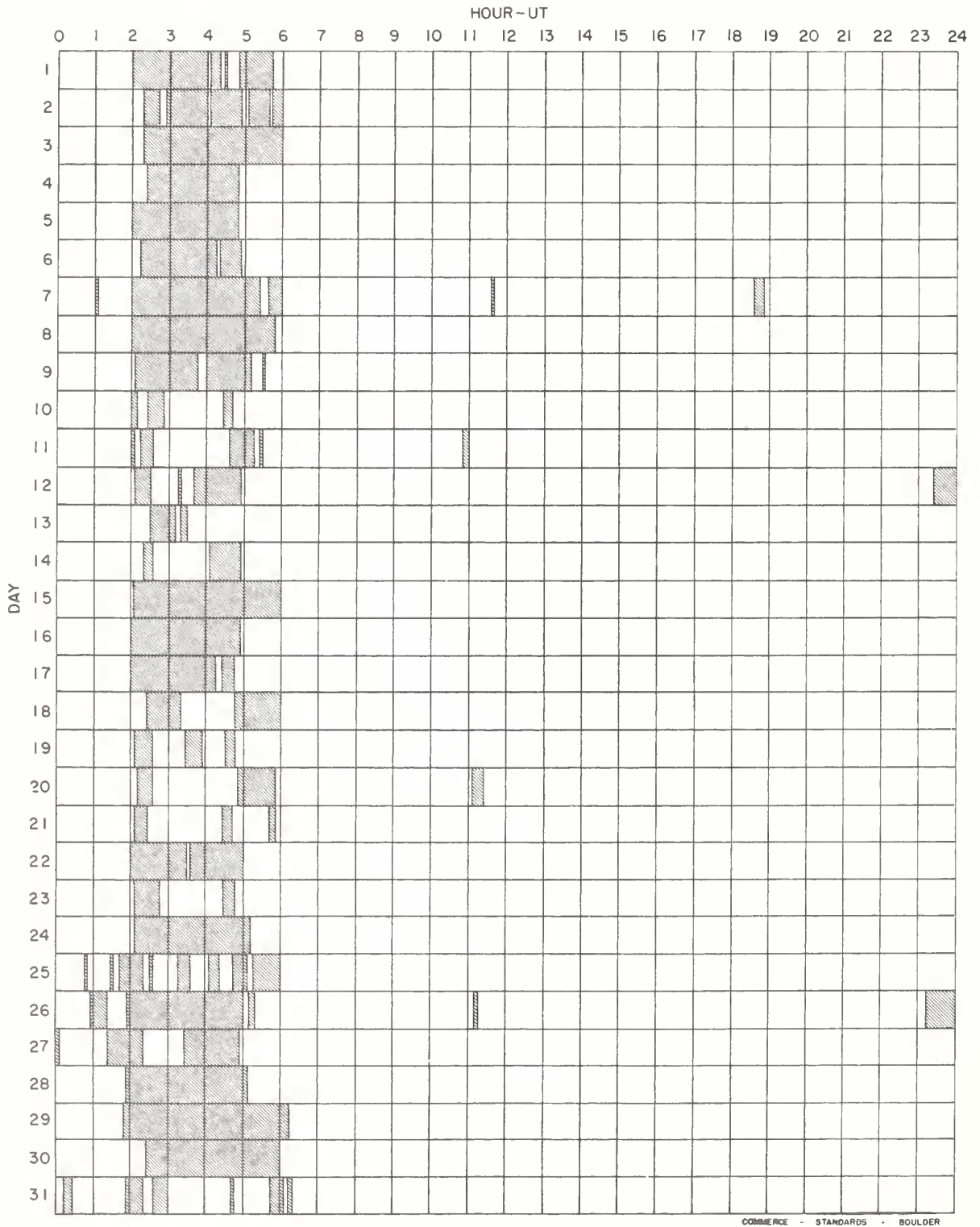
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

JULY 1963



Stations Include:

Arcetri	Capri-S (Swedish)	Honolulu	Kodaikanal	Ottawa
Athenes	Haute-Provence	Huancayo	Lockheed	Sacramento Peak
Bucharest	Herstmonceux	Istanbul	McMath-Hulbert	

# SOLAR FLARES

APRIL 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS. COND.	TIME		MEASUREMENTS		MAX WIDTH H <sub>z</sub>	MAX INT H <sub>z</sub>	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER. DIST.	MAGNITUDE PLACE REGION				— U.T.	Sq. Deg.	AREA Sq. Deg.	Corr. Sq. Deg.			
LOCARNO CAPETOWN CAPRI-F	APR 1963															
	01	0815	0820			NO FLARE										
	01	0920	0925			NO FLARE										
	01	0955	1005			NO FLARE										
	01	1100	1130			NO FLARE										
	01	1155	1210			NO FLARE										
	01	2000	2205			NO FLARE										
	02	0840	1010				90	1+	2	0850	1.30	2.20				
	02	0847	0905				18	1	3	0905	4.00	6.52				
	02	0905	0917				12 D	2								
CLIMAX IKOMASAN	04	0200	0215			NO FLARE										
	04	0220	0230			NO FLARE										
	05	0150	0215			NO FLARE										
	05	1928	1938				55 D	1-	3	2400	.70	.70		.86	100	
	05	2350	0045				67	1	3	0008	6.00	6.10		.94	120	
	05	2353	0100								3.20	3.60				
	06	0110	0130			NO FLARE										
	06	0151	0159					1-	2							
	06	0210	0215			NO FLARE										
	06	0240	0245			NO FLARE										
HAUTE-PROV CAPETOWN	06	1349	1415					1-			.30	.30				
	07	0205	0230			NO FLARE										
	07	0955	1019				26	1-		1007	2.00	2.10				
	07	1003	1029					1								
	07	1940	1950			NO FLARE										
	08	0200	0210			NO FLARE										
	08	0215	0230			NO FLARE										
	08	0235	0255			NO FLARE										
	08	0548	0555					1-								
	08	0659	0710					1-								
HAUTE-PROV LOCARNO	08	1525	1600				35 D	1	2							
	08	2020	2030			NO FLARE										
	08	2020	2030			NO FLARE										
	08	2025	2030			NO FLARE										
	08	2045	2050					1	2	2345				120		
	08	2345														
	08	2345														
	08	2345														
	08	2345														
	08	2345														
ICCLE UCCLE	08	0100	0205			NO FLARE										
	08	0210	0225			NO FLARE										
	08	1140	1142			NO FLARE										
	09	1705	1730				22 E	1-	3	1141						
	09	1735	1805			NO FLARE										
	09	1840	1845			NO FLARE										
	09	1905	2010			NO FLARE										
	09	2030	2035			NO FLARE										
	09	2040	2055			NO FLARE										
	09	2145	2245			NO FLARE										
HAUTE-TUMANI	10	0250	0255			NO FLARE										
	10	0740	0803				22 D	1+	1							

## SOLAR FLARES

APRIL 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX LAT.	MER DIST.				TIME — U.T.	MEAS. AREA Sq Deg	CORR. AREA Sq Deg	MAX WIDTH H <sub>3000</sub>	
NIZMIR BAKU CAPRI-F	10 APR 1963	0741 E	0830 D			6759	1+			10.83			60
	10	0744	0925	N11 W45		6759	1	2	0751	1.83	2.82		56
	10	0750 E	0906 D	N14 W43		6759	2	1	0750	5.00	7.50		
	11	0030 E	0036 D	N03 W65			1-	2	0030	1.00	2.60	1.26	80
IKOMASAN IKOMASAN HAUTE-PROV	11	0602 E	0635 D	N16 W47		6759	1		0605	1.60	2.50		
	11	0710	0749	N15 W48			1-	3					
	11	0840 E	0846	N16 W52			1-	3	0844				
	11	0840 E	0955 D	S11 E49		6766	75 E	3					
UCCLE HAUTE-PROV HAUTE-PROV	11	0843	0910 D	S10 E47			1-	3					
	11	0900	0950 D	S08 E48			1-						
	11	0908	0921 D	N16 W52			1-	3	0930				
	11	0922	1010	N16 W52		6759	48	3					
UCCLE UCCLE UCCLE	11	1010	1020	NO FLARE	PATROL		1						
	11	1025	1030	NO FLARE	PATROL								
	11	1035	1040	NO FLARE	PATROL								
	11	1055	1135	S19 E49			1-	3					
UCCLE UCCLE UCCLE	11	1225	1244	NO FLARE	PATROL								
	11	1318	1330	S11 E48			1-	3					
	11	1318	1430	S19 E48			1-	3					
	11	1420	1530	N15 W54			1-	3					
UCCLE UCCLE UCCLE	11	1439	1530	N16 W54			1-	3					
	11	1504	1532	N10 W45			1-	3					
	11	2323 E	0102 D	N16 W57		6759	90 D	2	2334	3.60	7.00	1.14	120
	11	2327	2351	N07 W69		6759	24	1	0031	1.60	2.40	2.71	83
IKOMASAN CLIMAX MITAKA	11	2330 E	0057	N15 W56		6759	87 D	1		2.01	3.90		
	12	0833 E	0844	S19 E34			1-	3					
	12	0833 E	0856	N16 W56			1-	3					
	12	0833 E	1001	S10 E33			1-	3					
UCCLE CAPE TOWN UCCLE	12	0915	0929	S19 E34			1-	3					
	12	0950	1003	N17 W64		6759	13	3	0952	1.10	2.70		
	12	0956 E	1006 D	N16 W56			1-	3					
	12	1138	1223	S12 E31			1-	3					
HAUTE-PROV CAPE TOWN UCCLE	12	1142	1209	S11 E32		6766	27	1	1145	3.00	3.60		
	12	1154	D	S12 E31		6766	1	3					
	13	0120	0135	NO FLARE	PATROL								
	13	0150	0425	NO FLARE	PATROL								
UCCLE UCCLE UCCLE	13	0440	0450	NO FLARE	PATROL								
	13	0455	0500	NO FLARE	PATROL								
	13	0515	0520	NO FLARE	PATROL								
	13	0632 E	0645	N18 W78			1-		0632	.70			
CAPE TOWN CAPE TOWN UCCLE	13	0720	0741 D	N18 W78		6759	21 D	1-	0723	.80			
	13	0835	0910	N16 W80			1-						
	14	0000	0050	NO FLARE	PATROL								
	14	0110	0115	NO FLARE	PATROL								
UCCLE UCCLE UCCLE	14	0140	0150	NO FLARE	PATROL								
	14	0245	0255	NO FLARE	PATROL								
	14	0345	0355	NO FLARE	PATROL								
	14	0330											

# SOLAR FLARES

APRIL 1963

OBSERVATORY	DATE APR 1963	OBSERVED TIME		MAX. PHASE	LOCATION		DURATION MINUTES	IM. FOR- TANCE	OBS. COND.	TIME U.T.	MEASUREMENTS		MAX. WIDTH He	MAX. INT. %	PROVISIONAL IONOSPHERIC EFFECT
		START	END		APPROX. LAT.	APPROX. MER. DIST.					MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.			
HAUTE-PROV CAPETOWN CLIMAX	14	0848	0855		S20 E00			1-		1218	.40				
	14	1215	1228		N15 W90			1-							
	14	1516	1528		S11 E05			1-			.40				
	14	2005	2120		PATROL										
	14	2140	2155		PATROL										
	14	2225	2245		PATROL										
	14	2255	2310		PATROL										
	14	2345	2400		PATROL										
	15	0000	0200		PATROL										
	15	0230	0305		PATROL										
	15	0315	0320		PATROL										
	15	0325	0345		PATROL										
	15	0420	0450		PATROL										
	15	0750 E	0757 D		S10 W07	6766	7 D	1	1	0750	1.50	1.51			
CAPRI-F HAUTE-PROV CAPETOWN CLIMAX	15	1034	1210		S10 W07	6766	96	2		1116	9.10	9.20			
	15	1042	1101		S10 W06			1-		1050	1.00	1.00			
	15	1121	1225		S10 W06	6766	64	2		1126	6.10	6.10			S-SMF
	15	1405 E	1517 D		S13 W10	6766	72 D	1	2	1418	4.00	4.04			
	15	1417	1434		S10 W08	6766	17	1	2	1421	1.00	1.00			
	15	1603 E	1610		S11 W09	6766	7 D	1	2	1603	1.00	1.01			
	15	1607 E	1640 D		S10 W10	6766	33 D	2	1	1610	5.80	6.00			S-SMF
	15	1619 E	1625 D		S11 W11	6766	6 D	1	1	1619	3.50	2.52			
	15	1619 E	1645		S09 E07	6766	26 D	1			3.40	3.40			
	15	1726	1735		S15 W09			1-			.40	.40			
	15	2350	2400		PATROL										
	16	0000	0035		PATROL										
	16	0145	0300		PATROL										
	16	0726	0746		S12 W15			1-							
HAUTE-PROV HAUTE-PROV HAUTE-PROV HAUTE-PROV CLIMAX	16	0847	0921		S13 W22			1-							
	16	1016	1030		S18 W18			1-							
	16	1144 E	1210 D		S10 W18			1-							
	16	1641	1704		S14 W22			1-			.70	.70			
	17	0446	0502		S14 W28	6766	16	1	1	0454	1.01	1.13	1.06	134	
	17	0930	0950		S12 W30			1-		0932	1.20	1.40			
	17	1412	1422		S05 W37			1-			.40	.40			
	17	1415	1426		S10 W36	6766	11	1	2	1415	.90	1.00			
	17	1519	1529		S11 W38			1-							
	17	2305	2330		PATROL										
	17	2335	2345		PATROL										
	17	2350	2400		PATROL										
	18	0000	0020		PATROL										
KODAIKUN HAUTE-PROV HAUTE-PROV UCCLE	18	0025	0045		PATROL										
	18	0150	0205		PATROL										
	18	0418	0428		S17 W39	6766	10	1	2	0420	1.90	2.50	2.00	114	
	18	0908	0920		S10 W50			1-							
	18	1537	1608 D		S10 W43			1-							
	18	1538	1456 D		S07 W47			1-							
	19	0035	0055		PATROL										

SOLAR FLARES  
APRIL 1963

OBSERVATORY	DATE	OBSERVED UNIVERSAL TIME		LOCATION		DUR. T MINUTES	IM. FOR- TANCE	OBS. COND.	MEASUREMENTS				PROVISIONAL IONOSPHERIC EFFECT		
		START	END	APPROX. LAT	APPROX. MER. DIST				MAGNITUDE PLACE REGION	TIME UT	MEAS. AREA Sq Deg	COOR. AREA Sq Deg		MAX WIDTH Ha	MAX INT. °
CAPETOWN UCCLE UCCLE VOROSHILOV	19	0100	0140	NO FLARE			27	1		1141	1.10	2.20			S-SWF
	19	1136	1203	1141 U		6766		1	3						
	19	1138	1151	S09 W65				1							
	19	1521 E	1536	S07 W70				1	3						
	19	2050	2100	NO FLARE											
	19	2346	2353 D	2357	S14 W63			1	1		1.26			58	
	20	0057	0135 D		S11 W65	6766	38 D	1	2	0125	2.40	5.90	0.78	90	
	20	0213 E	0243 D	0218	S11 W65	6766	30 D	2	2	0218	1.31		2.41	120	
	20	0224 E	0247	0228	S11 W68	6766	23 D	1	1	0224	2.60				
	20	0247	0300	0251	S10 W67	6766	13	1	2	0251		5.10	1.56	122	
HAUTE-PROV UCCLE UCCLE HAUTE-PROV HAUTE-PROV HAUTE-PROV KIEVKO CLIMAX	20	0746	0811	S08 W78				1							
	20	0833 E	0839 D		S10 W70			1	3						
	20	0833	0839 D		S10 W70			1	3						
	20	0919 E	0951	S08 W71				1							
	20	1000	1005	S10 W70				1							
	20	1011	1021	S10 W70				1							
	20	1028	1034	S10 W67				1							
	20	1115	1120	NO FLARE											
	20	1200	1224	S09 W71		6766	24	1	1	1209	3.09	1.60		76	
	20	1202 E	1209 D	1209	S10 W80	6766	7 D	1	1		.70				
CAPETOWN	20	1504	1513	1507	S08 W80										
	21	0200	0300	NO FLARE											
	21	0400	0505	NO FLARE											
	21	0620	0630	0622	S08 W88	6766	10	1		0622	.70				
	22	0205	0220	NO FLARE											
	22	0225	0230	NO FLARE											
	23	0555	0600	NO FLARE											
	24	0200	0205	NO FLARE											
	24	0210	0225	NO FLARE											
	25	0205	0215	NO FLARE											
CLIMAX	25	2225	2240	NO FLARE											
	26	0205	0220	NO FLARE											
	26	0250	0300	NO FLARE											
	26	0310	0335	NO FLARE											
	26	0345	0355	NO FLARE											
	26	1535	1545	NO FLARE											
	26	1605	1615	NO FLARE											
	26	2220	2230	NO FLARE											
	26	2240	2310	NO FLARE											
	27	1351	1404	1354	N12 E90	6766	13	1			.60	3.00			
CLIMAX	28	0145	0150	NO FLARE											
	28	0155	0240	NO FLARE											



# SOLAR FLARES

APRIL 1963

OBSERVATORY	DATE APR 1963	OBSERVED UNIVERSAL TIME		LOCATION			DURA- TION — MINUTES	IM- POR- TANCE	OBS COND.	TIME		MEASUREMENTS		MAX. INT. I <sub>H</sub>	PROVISIONAL IONOSPHERIC EFFECT
		START	END	APPROX. LAT.	MER DIST	MAGNITU- DE REGION				U T		MEAS. AREA Sq. Deg.	CORR. AREA Sq. Deg.		
CLIMAX	30	0022	0039	N17 E70				1-	1	0030		.40	.80		
HONOLULU	30	0026 E	0046 D	N16 E85				1-				.62	.96		
HAUTE-PROV	30	0625	0628	N15 E61				1-							
LOCARNO	30	0930	1010	N17 E65		6790	40	1+	1					75	
NIZMIR	30	0945	0959	N14 E65		6790	14	1+				2.68			
CAPETOWN	30	0946	1008	N16 E64		6790	22	1	3	0949		1.70	4.30		
KHARKOV	30	0948	1138 D	N16 E60		6790	110 D	1+	3	0957			9.90	1.80	
UCCLE	30	0951 E	1015	N16 E62				1-							
HAUTE-PROV	30	0955	1015	N14 E62				1-				.60	1.20		
CAPETOWN	30	1050	1058	N16 E59				1-							
HAUTE-PROV	30	1050	1058	N14 E59				1-							
HAUTE-PROV	30	1143	1230	N17 E52				1-							
CAPETOWN	30	1143	1245	N17 E57		6790	62	1-		1147		1.40	2.80		
HAUTE-PROV	30	1145	1210	N14 E57				1-							
CAPRI-F	30	1201 E	1256	N16 E54		6790	55 D	2	3	1204		4.00	7.20		
HAUTE-PROV	30	1230	1236	N13 E58				1-							
	30	2105	2300	NO FLARE											
	30	2305	2330	NO FLARE											

COMMENCE - STUDYING - STOP

These flare reports are addenda to the April 1963 flares published in CRPL-F 225 B for May 1963.

ATHENS	ATHENS, GREECE	HONOLULU	HAWAII, USA	NERA	NEDEBHOEST den BERCH, NETHERLANDS
BAKOU	PIRCULI, USSR	TIKOMAN	KYOTO, JAPAN		
CAPETOWN	ROYAL OBSERVATORY, CAPE OF GOOD HOPE	KIEV KO	KIEV GAO, USSR	NIZMIR	KRASNOYA PAKRA, USSR
CAPRI F	CAPRI, ITALY (GERMAN)	KIEV KY	KIEV UNIVERSITY, USSR	SAC PEAK	SACRAMENTO PEAK, N.MEX. USA
CAPRI S	CAPRI, ITALY (SWEDISH)	LOCKHEED	LOS ANGELES, CALIF., USA	SALTSJÖBÄDEN	STOCKHOLM, SWEDEN
CRIMEE	SIMEIZ, USSR	MCNATH	MCNATH-HULBERT	SCHAUTINS	SCHAUTINSLAND, GFR
HERSTMONECEU	ROYAL GREENWICH OBSERVATORY, HERSTMONECEUX, ENGLAND	MOSCOW	PONTIAC, MICH., USA	TACHKENT	TASHKENT, USSR
HTE-PROVEN	HAUTE-PROVENCE		MOSCOW-GAISH, USSR	WENDEL	WENDELSTEIN, GFR
			NEW SCHAUTIN FREIBURG, GFR		

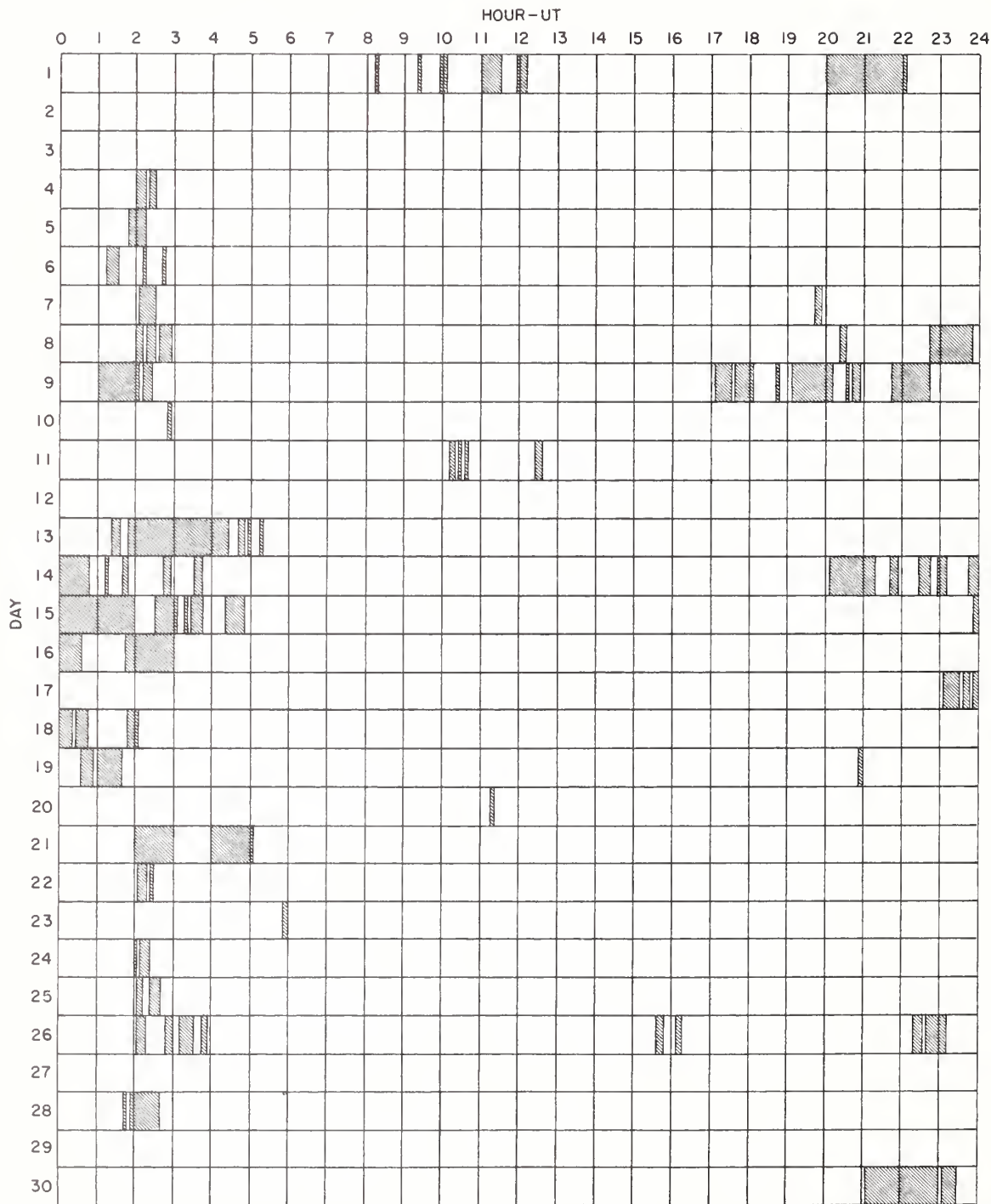
ALL VALUES IN THE MAXIMUM INTENSITY COLUMN FOR SAC PEAK ARE ARBITRARY UNITS (0-40) AND FOR LOCKHEED ARE ARBITRARY UNITS (10-40), NOT PERCENT OF CONTINUOUS SPECTRUM.

SEE DESCRIPTIVE TEXT PUBLISHED NOVEMBER 1961 FOR DEFINITION OF CORRECTED AREA VALUES LISTED FOR CLIMAX, HAWAII, LOCKHEED AND SACRAMENTO PEAK.

E = LESS THAN D = GREATER THAN U = APPROXIMATE □ = NOT REPORTED.

## INTERVALS OF NO FLARE PATROL OBSERVATIONS

APRIL 1963



COMMERCE - STANDARDS - BOULDER

Observatories Include:

Abastumani  
Arcetri  
Athenes  
Bakou  
Bucharest

Capetown  
Capri-F (German)  
Capri-S (Swedish)  
Climax  
Crimee

Haute-Provence  
Honolulu  
Huancayo  
Ikomasan  
Istanbul

Kharkov  
Kiev KO  
Kodaikanal  
McMath-Hulbert  
Meudon

Mitaka  
Nizamia  
Nizmir  
Ondrejov  
Ottawa

Sacramento Peak  
Schauinsland  
Tachkent  
Uccle  
Voroshilov

# IONOSPHERIC EFFECTS OF SOLAR FLARES

IIIa

SHORT WAVE RADIO FADEOUTS  
SUDDEN COSMIC NOISE ABSORPTION  
SUDDEN ENHANCEMENTS OF ATMOSPHERICS  
SUDDEN PHASE ANOMALIES  
SOLAR NOISE BURSTS AT 18 Mc

JUNE 1963

JUNE 1963	UNIVERSAL TIME			SWF TYPE	IMP	IMPORTANCE					WIDE SPREAD INDEX	STATIONS	KNOWN FLARE
	START	END	MAX			ABS	SCNA	SEA	SPA	BUR			
10	1814	1817		S	1+					1	4	MC BO	1814
10	2017	2019								1	5	MC BU HA	
11	0105	0107								1	5	HA MA	*
12	1750	1753								1	4	MC BO	*
12	1807	1810								1	5	MC BO HA	
13	0035	0045								1	5	MA HA	40 0133
13	0131	0141								1	5	HA MA	
14	0223	0248								5	TO AD MA	* 0619	
14	0628	0633								1	5		RO MA HA
18	1606	1609											

COMMENCE - STANDARDS - BOULDER

Note: Noise storm on 18 Mc/s at BO, HA, MA, RO and MC from June 12, 0102 U.T. to June 14, 2215 U.T.

**SOLAR RADIO EMISSION**  
**OUTSTANDING OCCURRENCES**  
**JULY 1963**

ARO - OTTAWA

2800 Mc.

July 1963	TYPE	START UT	DURATION HRS MIN		MAXIMUM			REMARKS
					TIME UT	PEAK FLUX	MEAN FLUX	
3	3 Simple 3	1420	2	00	1445	2.5	1.5	
3	3 Simple 3 A	2300		>35	Indet.	3	--	
	2 Simple 2	2312		4	2313.2	8	3	
10	1 Simple 1	2056.3		1	2056.7	2	1	
11	6 Complex	1205.3		1.7	1205.4	5.5	2	
29	3 Simple 3 A	1830	>5	05	Indet.	10	--	
	6 Complex f	2141.3		7.7	2144.7	79	33	
30	1 Simple 1 f	1105.5		0.8	1106	4	3	
30	1 Simple 1	1207.9		0.5	1208	1	0.5	
30	1 Simple 1	1239.7	1		1240	0.6	0.3	
30	1 Simple 1	1244.5		0.9	1245	1.5	0.7	
31	2 Simple 2	2234.8		1.2	2235.2	10	6	

COMMERCE - STANDARDS - BOULDER

SELECTED 2800 MC/S SOLAR NOISE BURSTS  
OTTAWA, CANADA

JULY 1963

FLUX

84

42

0

JULY 29, 1963



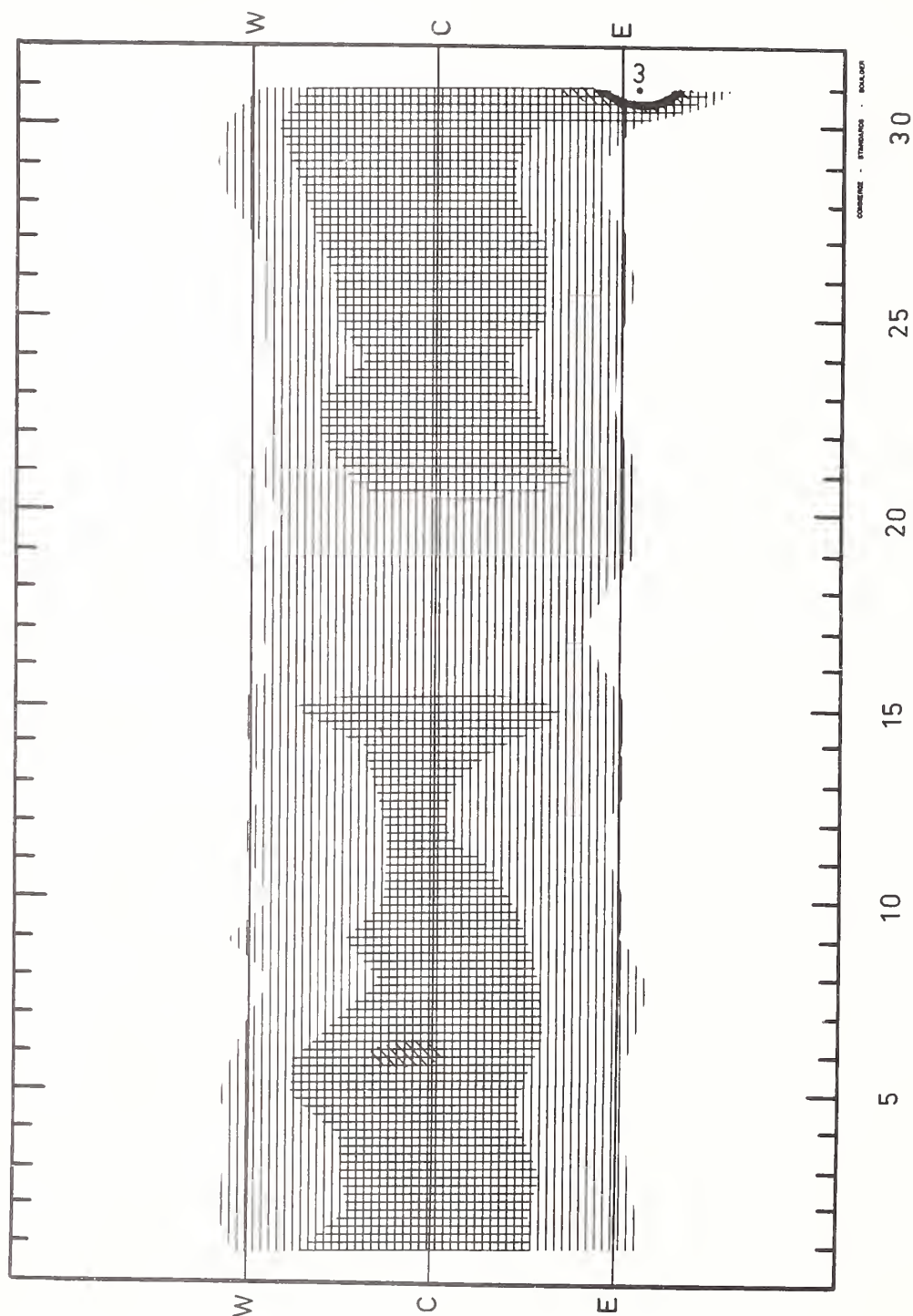
COMMERCE - STANDARDS - BOULDER

SOLAR RADIO EMISSION  
INTERFEROMETRIC OBSERVATIONS

JULY 1963

# NANÇAY

169 Mc.



# SOLAR RADIO EMISSION OUTSTANDING OCCURRENCES

IVd

JULY 1963

**BOULDER**

**108 Mc.**

July 1963	Type	Start UT	Time of Maximum UT	Duration Minutes	Intensity
9	3	1810.9	1812.0	1.2	3
11	3	1636.2	1637.1	1.9	3
12	3	1239.9	1240.0	1.5	2
15	3	1249.2	1250.8	1.8	2
21	3	1816.0	1816.5	0.8	2

COMMERCE - STANDARDS - BOULDER

## NOMINAL TIMES OF OBSERVATION OUTSTANDING OCCURRENCES

JULY 1963

**BOULDER**

**108 Mc.**

July 1963	U.T.		July 1963	U.T.
1	1140-0210	1830-0210 (1)	16	1149-0206
2	1140-0210	1743-2217 (1)	17	1150-0206
3	1141-0209	1846-2351 (1)	18	1151-0205
4	1141-0209	1820-0111 (1)	19	1152-0204
5	1142-0209	1855-2246 (1)		2242-2304;
				2345-0125 (1)
			20	1152-0204 I 2028-2155 (1)
6	1142-0209	1935-0209 (1)		
7	1143-0208	1820-0208 (1)	21	1153-0203 I 2220-0203 (1)
8	1144-0208	1904-2346 (1)	22	1154-2054;
9	1144-0208	1715-2330 (1)		1610-2054;
10	1145-0207		23	2213-0202 2213-0202 (2)
			24	1155-1428
			25	No usable record
11	1145-0208	1736-2200;		1157-1850
		0008-0122 (1)		
12	1146-0207	2049-0155 (1)	26	1157-1405
13	1147-0207		27	1158-1600
14	1148-0207	1628-2317 (1)	28	No usable record
15	1148-0207	2100-0207 (1)	29	1200-1430
			30	1201-1330
			31	1202-1420;
				1835-0155

COMMERCE - STANDARDS - BOULDER

- (1) Atmospheric  
(2) F.M. Interference

IVc

# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

APRIL 1963

Fort Davis

53-320 Mc.

1963 <small>USCARS REC 13</small>	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U. T.	INT		
Apr. 1	1300-2100 2217-2300					
Apr. 2	1300-2300					
Apr. 3	1300-2300					
Apr. 4	1300-2300					
Apr. 5	1300-2300					
Apr. 6	1300-2300					
Apr. 7	1300-2300					
Apr. 8	1300-2300					
Apr. 9	1300-2300					
Apr. 10	1300-2300					
Apr. 11	1300-2300					
Apr. 12	1300-2300	I I	1340-1534 ~ 1740-~2120	2 1	280-100 280-100	Weak I throughout day
Apr. 13	1300-2300					Weak I during day
Apr. 14	1300-2300					Weak I during day
Apr. 15	1300-2300	IIIG IIIG IIIG	2101-2107 2138-2142 2201-2204	3 3 3	250-<50 75-<50 180-<50	Weak I during day
Apr. 16	1300-2300	IIIG IIIG	1642-1644 1648-1654	2-3+ 2-3+	200-<50 300-<50	Weak I throughout day
Apr. 17	1300-2300	I IIIG IIIG IIIG IIIG IIIG IIIG	1300-2002 1819-1821 1831-1833 1958-2002 2241-2242 2247-2249	2 2 2 1 1 2	240-125 250-<50 240-<50 180-<50 200-<50 240-<50	Type I throughout day
Apr. 18	1300-2300	I IIIG IIIG IIIG IIIG IIIG IIIG IIIG IIIG IIIG	1300-1840 1340-1343 1345-1347 1411-1412 1417-1422 1641-1647 1835-1838 1839-1843 2259-2300	2 2 1-3 3 1-3 2 2 3+ 1	240-75 240-<50 180-<50 290-<50 240-<50 180-<50 240-<50 300-<50 180-<50	Weak I throughout day
Apr. 19	1300-2300	IIIG IIIG	1427-1438 1904-1905	2-3 1	290-<50 280-<50	Weak I throughout day
Apr. 20	1300-2300					Weak I throughout day
Apr. 21	1300-2300					
Apr. 22	1300-2300					
Apr. 23	1300-2300					
Apr. 24	1300-2300					
Apr. 25	1300-2300					
Apr. 26	1300-2300					
Apr. 27	1300-2300					
Apr. 28	1300-2300					
Apr. 29	1300-2300					
Apr. 30	1300-2300					



# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

IVf

MAY — JUNE 1963

Fort Davis

53-320 Mc.

1963 <small>1000-1400 HRS</small>	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U.T	INT.		
May 1	1300-2300					
May 2	1547-2300					
May 3	1300-2300					
May 4	1300-2300	IIIG	1453-1455	2	220-<50	
May 5	1300-2300					
May 6	1300-2300					
May 7	1300-2300					
May 8	1300-2300					
May 9	1300-2300					
May 10	1300-2300					
May 11	1300-2300					
May 12	1300-2300					
May 13	1300-2300					
May 14	1300-2300	IIIG	1343-1344	2	280-<50	Weak I during day
May 15	1300-2300					Weak I throughout day
May 16	1300-2300					Weak I throughout day
May 17	1300-2300	IIIG	1945-1947	2-3	230-<50	Weak I throughout day
May 18	1300-2300					Weak I during day
May 19	1300-2300	IIIG IIIG	1302-1303 2139-2146	3 2-3	200-<50 240-<50	Weak I during day
May 20	1300-2300	IIIG IIIG	2247-2250 2255-2258	2 2	270-<50 320-<50	Weak I during day
May 21	1300-2300	IIIG IIIG	1506-1509 1958-1959	2-3 2	300-<50 240-<50	
May 22	1300-2300	IIIG	2246-2249	2	200-<100	
May 23	1300-2300					Weak I during day
May 24	1300-2300	IIIG II IIIG IIIG IIIG	1434-1435 1519.7-1527 1802-1803 1807-1809 2047-2052	3 2 2 2 2	230-<50 175-<50 175-<50 175-<50 200-<50	Weak I during day 1516: Type V
May 25	1300-2300	IIIG IIIG II IIIG I	1610-1611 1621-1626 1623.5-1637 1707-1708 1820-2100	2 3+ 2 2 1-2	240-<50 240-<50 150-<50 320-<50 240-60	Weak I during day 1622: Type V
May 26	1300-2300					Weak I throughout day
May 27	1300-2300					
May 28	1300-2300					
May 29	1300-2300					
May 30	1300-2300	IIIG IIIG IIIG	2000-2001 2123-2124 2200-2202	1 1 1	280-100 190-100 240-100	1818: Type V
May 31	1300-2300					
Jun. 1	1233-2230					
Jun. 2	1233-2230					
Jun. 3	1233-2230					
Jun. 4	1233-2230					
Jun. 5	1233-2230					

SOLAR RADIO EMISSION  
SPECTRAL OBSERVATIONS

JUNE — 1963

Fort Davis

53-320 Mc.

196 3 <small>SECTION 402.15</small>	OBSERVING HOURS	IMPORTANT BURSTS			FREQUENCY RANGE MC	REMARKS
		TYPE	TIMES U. T.	INT.		
Jun. 6	1233-2230					
Jun. 7	1233-2230					
Jun. 8	1233-2230					Weak I during day
Jun. 9	1233-2230	I	1400-1500	1	200-115	Type I throughout day
Jun. 10	1233-2230					Weak I during day
Jun. 11	1233-2230	I I	1234-1400 ~ 1920-~2150	1-2 1-2	200-100 240-150	Type I throughout day
Jun. 12	1233-2230	I I IIIG IIIG I	1233-1500 1711-2028 1750-1752 1806-1807 1312-1700	2 2 2 2 1-2	280-100 280-100 175-<50 240-<50 320-100	Type I throughout day
Jun. 13	1234-2230	IIIG I IIIG I	1431-1433 2000-2230	3 1-2	320-100 320-<50	Type I throughout day
Jun. 14	1233-2230	IIIG IIIG IIIG IIIG	1417-1420 1946-1947 2132-2133 2134-2138	2 1 2 2	220-100 200-100 200-<50 280-100	Weak I during day
Jun. 15	1233-2230					Weak I during day
Jun. 16	1234-2230					
Jun. 17	1233-2230					
Jun. 18	1233-2230					
Jun. 19	1233-2230					
Jun. 20	1233-2230					
Jun. 21	1233-2230					
Jun. 22	1233-2230					
Jun. 23	1233-2230					
Jun. 24	1233-2230					
Jun. 25	1233-2230	IIIG IIIG IIIG	1403-1406 1846-1847 2033-2035	3 2 2	320-<50 290-<50 200-100	
Jun. 26	1233-2230					
Jun. 27	1233-2230					
Jun. 28	1233-2230					
Jun. 29	1233-2230					
Jun. 30	1233-2230					

# SOLAR RADIO EMISSION SPECTRAL OBSERVATIONS

IVh

JULY 1963

HAO BOULDER

7.6 - 41 Mc.

Date 1963	Bursts			Frequency Range (mc)	Date 1963	Bursts			Frequency Range (mc)
	Type	Time (U.T.)	Intensity			Type	Time (U.T.)	Intensity	
9 Jul	III	1414.15-1417	1	21-41	12 Jul	III	2439.15-2439.30	1-	17-41
	No Observ.	1744-1825			13	III	1935.30-1935.45	1-	28-41
	III	2058-2058.30	1-	21-27	15	III	1544.15-1544.30	1-	21-41
	III	2106.30-2109.30	1	19-34	16	III	2017-2017.30	1-	22-41
10	III	1355.15-1355.45	1	18-41	18	No Observ.	1751-1906		
	III	1358.15-1358.45	1-	22-41		No Observ.	1931-1947		
	III	1607.45-1608	1-	20-36	25	III	1952.30-1953	1	21-41
	III	1610.15-1610.30	1-	22-41	28	III	1509.15-1509.30	2	30-41
	No Observ.	2113-2227			29	III	1952-1952.30	1	7-41
12	III	1747.15-1750.30	2	7-41		III	1958.45-1959	1	21-41
	III	2053-2053.30	2	18-41		III	2143.15-2147.15	2	7-41
	III	2155.45-2157.15	1	23-41		III	2423-2423.45	1	16-41
	III	2331-2331.15	1-	20-33	31	III	1922-1923.15	2	7-41
	III	2425.45-2426	1-	23-41					
	III	2435.15-2438.15	2	12-41					

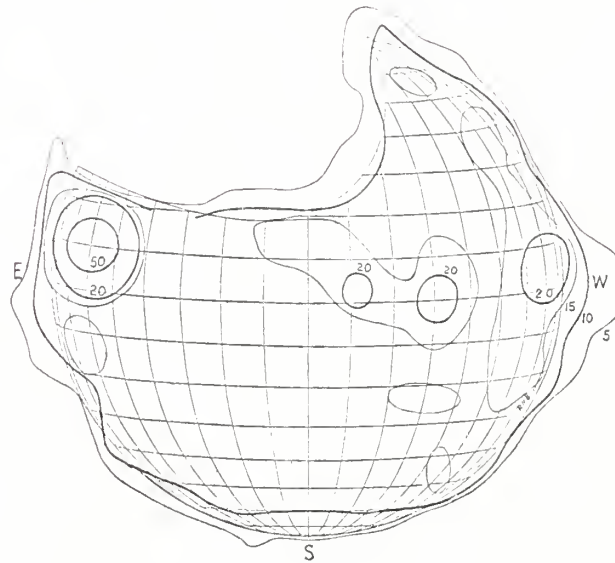
COMMENCE - STANDARDS - BOULDER

# IVi SOLAR ECLIPSE RADIO EMISSION SPECTROHELIOGRAMS

JULY 20, 1963

STANFORD

9.1 cm



STANFORD 9.1 CM SPECTROHELIOGRAM  
1963 July 20, 20<sup>h</sup>11<sup>m</sup> - 21<sup>h</sup>16<sup>m</sup> UT  
Brightness Unit = 2600°K

COMMERCE - STANDARDS - BROADCAST

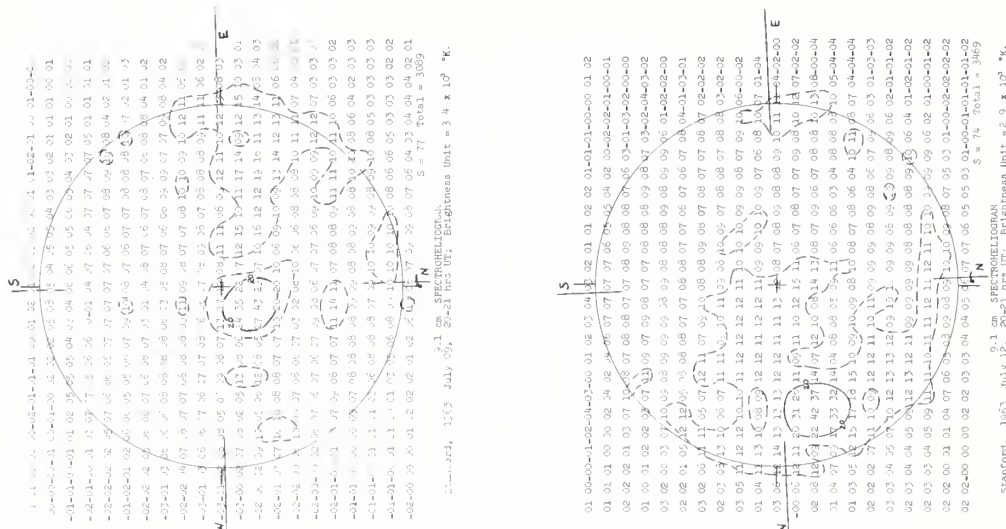
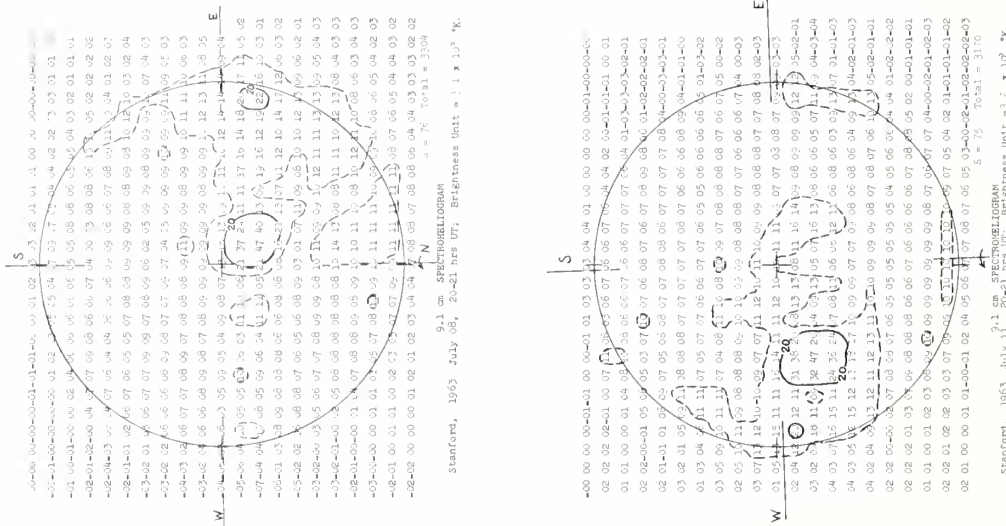
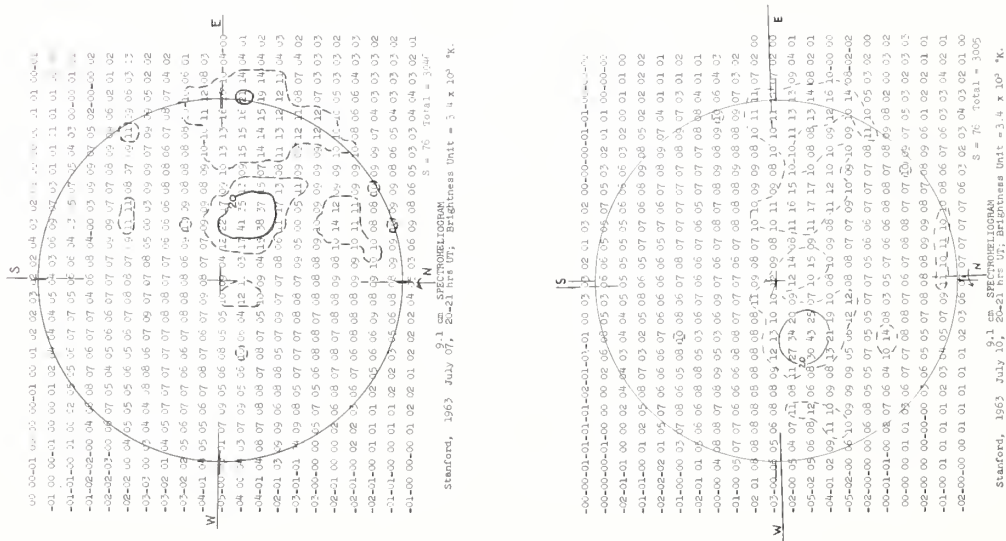


## SOLAR RADIO EMISSION SPECTROHELIOGRAMS

STANFORD

JULY 1963

9.1 cm

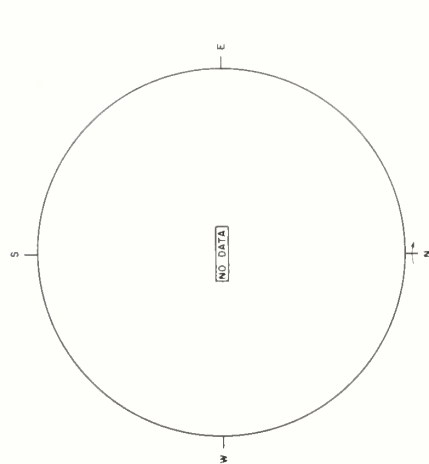




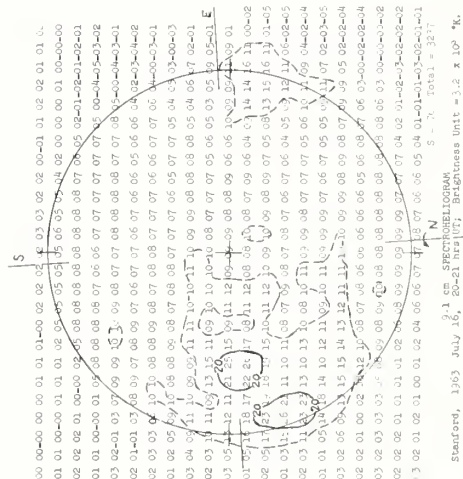
# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1963

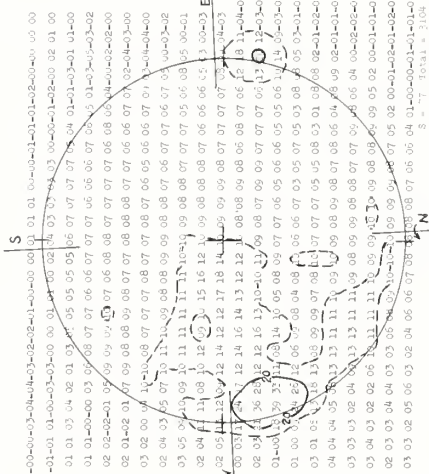
STANFORD



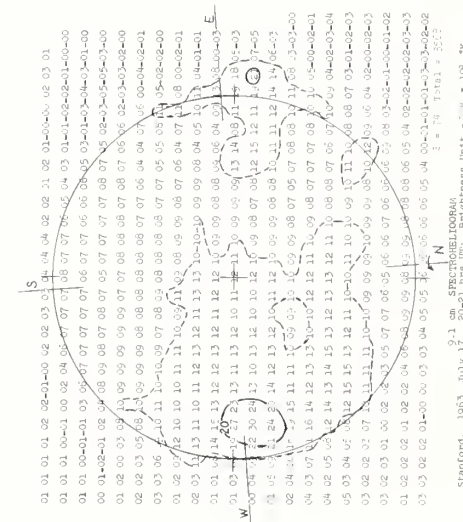
1963 JULY 13



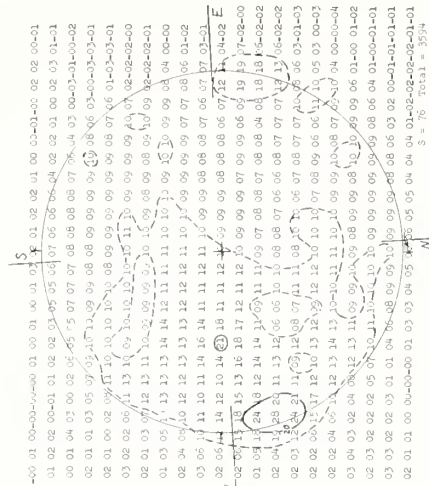
Stanford, 1963 July 16, 20-21 hrs UT. Brightness Unit =  $3.2 \times 10^4$  K.



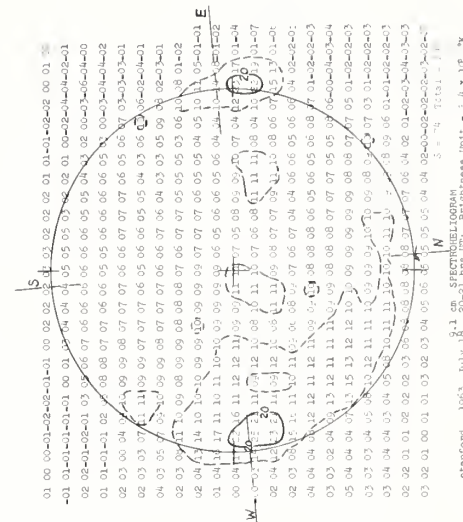
Stanford, 1963 July 17, 20-21 hrs UT. Brightness Unit =  $1 \times 10^4$  K.



Stanford, 1963 July 18, 20-21 hrs UT. Brightness Unit =  $1.4 \times 10^4$  K.



Stanford, 1963 July 15, 20-21 hrs UT. Brightness Unit =  $2.3 \times 10^4$  K.



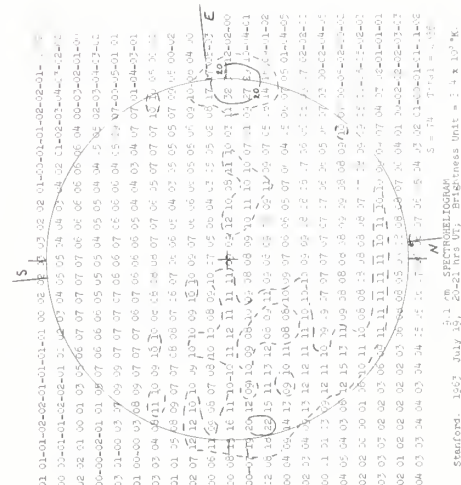
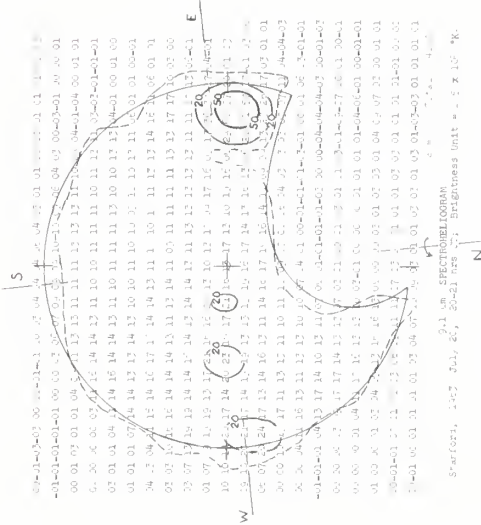
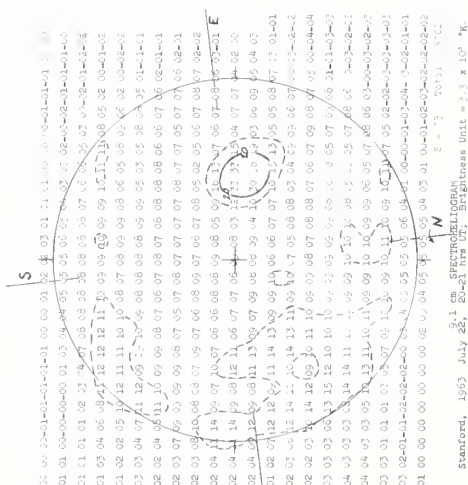
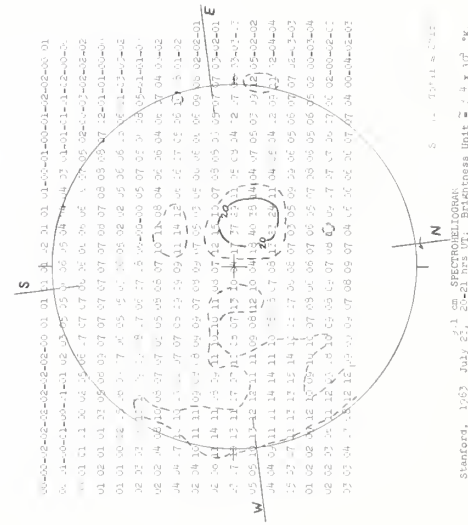
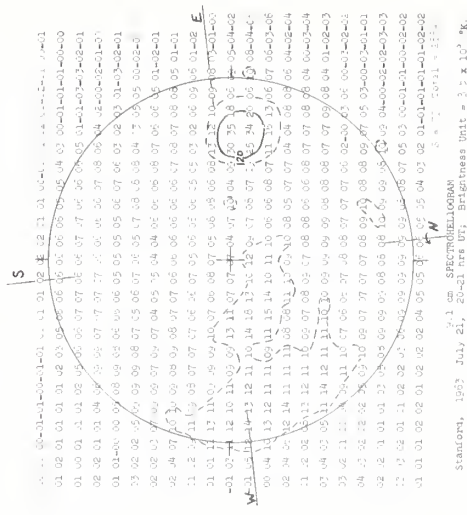
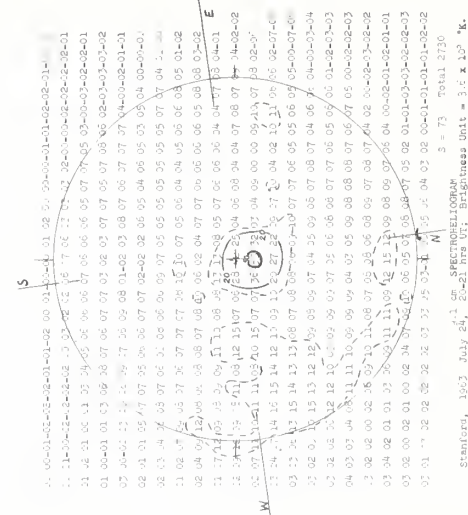
Stanford, 1963 July 18, 20-21 hrs UT. Brightness Unit =  $1.4 \times 10^4$  K.

## SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1963

STANFORD

9.1 cm

Stanford, 1963 July 15, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>Stanford, 1963 July 20, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>Stanford, 1963 July 22, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>Stanford, 1963 July 27, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>Stanford, 1963 July 21, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>Stanford, 1963 July 28, 20-21 hrs UT, Brightness Unit =  $1 \times 10^4$  W/m<sup>2</sup>

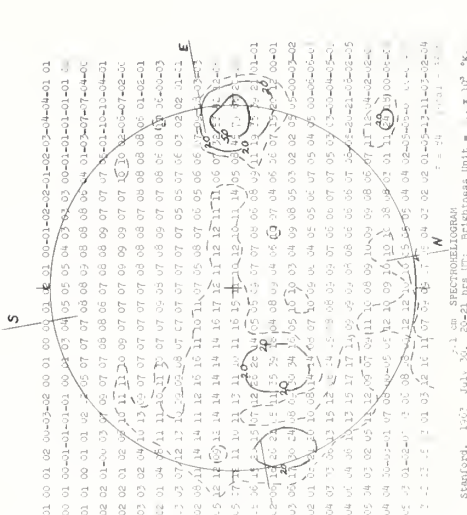
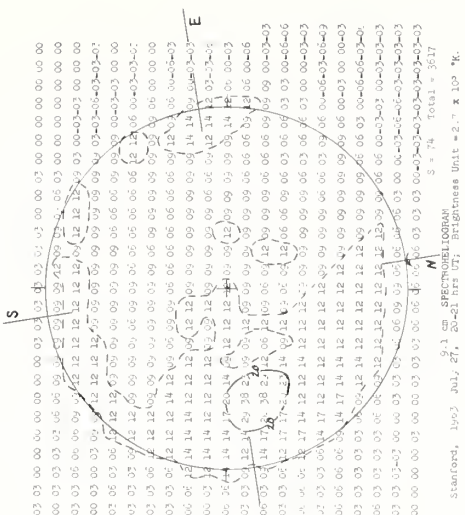
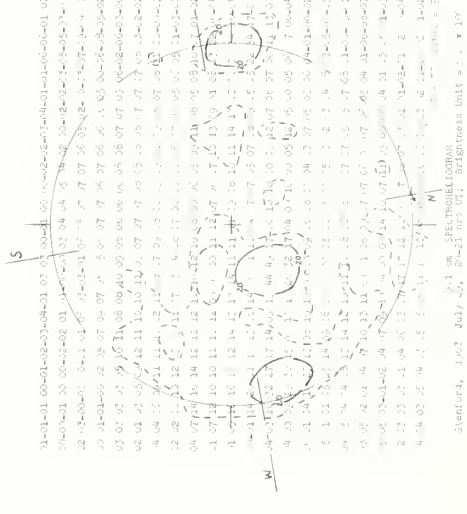
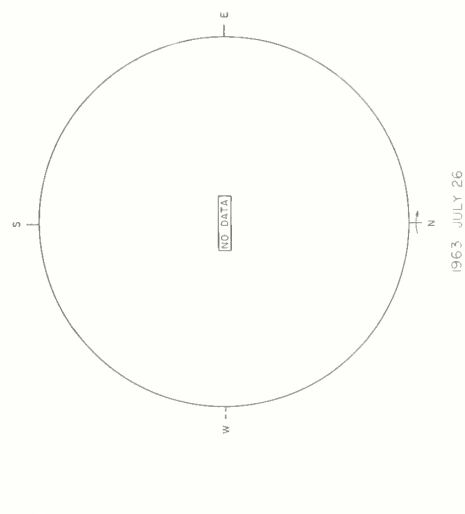
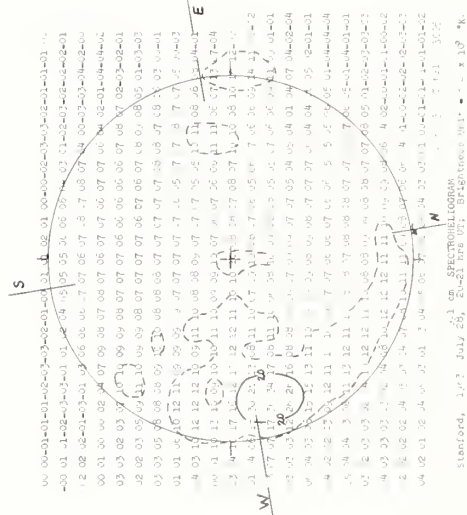
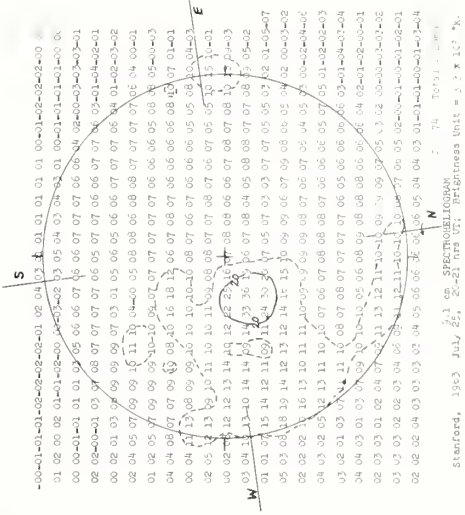


# SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1963

STANFORD

9.1 cm

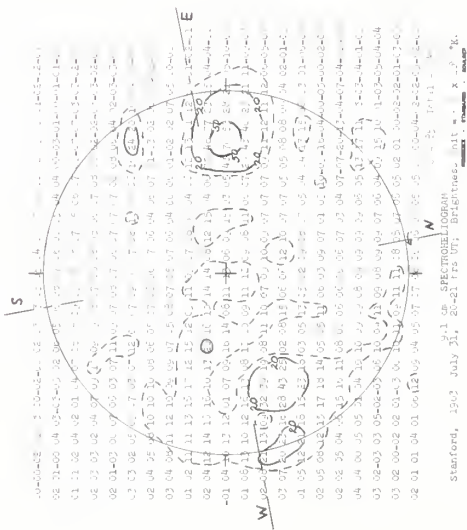


SOLAR RADIO EMISSION SPECTROHELIOGRAMS

JULY 1963

9.1 cm

STANFORD



Stanford, 1963 July 31, 20-21 UT, 8045' tree, lat. 33° 18' N, 119° 15' W.



Va

# COSMIC RAY INDICES

(Climax Neutron Monitor)

IGC Station B 305

JUNE 1963

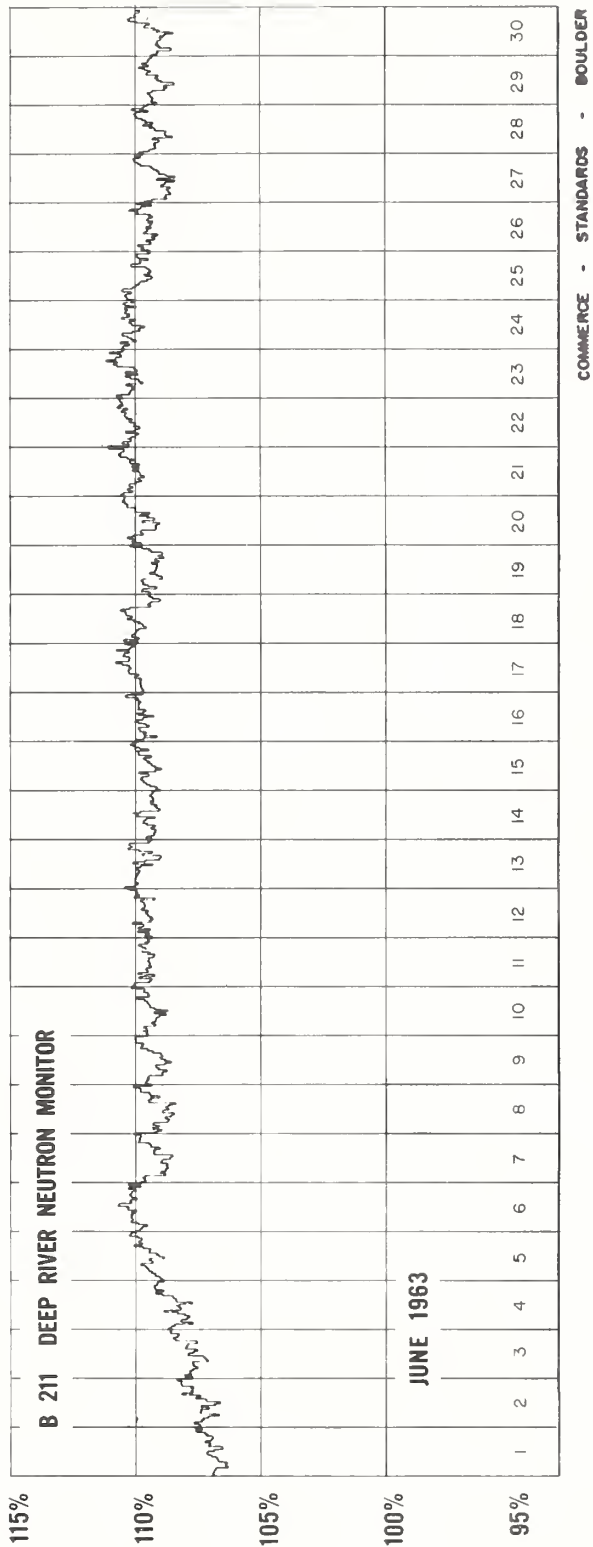
June 1963	Daily average counts/hr*	June 1963	Daily average counts/hr*
1	3132.6	16	3182.0
2	3140.6	17	3200.7
3	3143.6 **38	18	3199.7
4	3162.7	19	3175.0
5	3185.4	20	3190.5
6	3199.4	21	3203.4
7	3204.5	22	3212.0
8	3189.1	23	3213.9
9	3188.6	24	3212.3 **38
10	3189.1	25	3203.4
11	3182.8	26	3190.8
12	3176.9	27	3183.5
13	3182.0	28	3180.7
14	3169.1	29	3179.1
15	3181.8	30	3184.6

COMMERCE - STANDARDS - BOULDER

\*Scaling Factor 128

\*\*Number of Section Hours

COSMIC RAY INDICES  
(Pressure Corrected Hourly Totals)



COMMERCE - STANDARDS - BOULDER

## GEOMAGNETIC ACTIVITY INDICES

JUNE 1963

June 1963	C	Values Kp								Sum	Ap	Final Selected Days	
		Three hour Gr. interval											
		1	2	3	4	5	6	7	8				
1	0.6	2+	2+	2o	3+	3+	3-	1+	3-	20o	11	Five Quiet	
2	0.7	2o	3o	2+	2+	3-	3o	2+	1o	19-	10		
3	0.4	2-	2-	2o	2o	2+	1-	2-	2-	14-	6		
4	0.2	1o	1o	3-	1-	1+	1-	1-	1-	9-	5		4
5	0.0	0+	1o	0o	0+	0+	1-	0+	0+	3+	2		5
6	1.1	0o	1-	0+	1o	1+	2+	5-	6-	16o	16	16	
7	1.5	7o	6-	5-	3+	4-	4-	3+	4o	35+	43	22	
8	0.8	2o	2o	2o	3o	2-	3-	3-	4+	20+	12	23	
9	0.6	3+	3-	2+	3-	2+	2-	1+	2o	18+	10		
10	0.4	1+	1-	1o	2-	2-	1+	2o	1+	11o	5		
11	0.4	2o	2+	1+	1o	1o	2+	1+	1+	13-	6	Five Disturbed	
12	0.1	2-	2o	1o	2-	0+	1o	1+	1-	10-	5		
13	0.3	2o	1+	1o	2-	1+	1o	1+	2-	11+	5		
14	0.2	3-	0o	1o	2o	2-	2o	0+	1+	11o	5		7
15	0.6	2-	3+	3+	1+	1+	1+	2-	2o	16o	9		18
16	0.1	0+	0o	0o	0+	0o	2-	1+	1+	5o	2	25	
17	0.8	2+	2-	2+	2o	2+	3o	2+	2+	18+	9	26	
18	1.1	1o	3+	3-	3o	4+	3o	5o	4o	26+	21	27	
19	0.7	3+	3-	2-	1-	2-	2+	3+	3-	18+	10		
20	0.9	4o	3o	3o	3o	2+	2o	2o	2-	21o	13		
21	0.4	2+	2+	3-	3o	0+	1+	1+	1o	14+	8	Ten Quiet	
22	0.1	2-	2-	1+	1o	1o	1o	1-	1o	9+	4		
23	0.1	1o	1-	1-	1+	0+	1o	1o	1o	7o	4		
24	0.3	0+	1+	2-	1o	2+	3-	1+	2o	13-	6		4
25	1.1	3o	4o	4+	3-	2+	2+	4o	5+	28o	23		5
26	1.3	6-	5-	5o	3+	2+	2o	2+	3-	28o	26	10	
27	0.9	4-	4o	3+	3o	2+	1-	4-	3o	24-	16	11	
28	0.7	3-	2-	3+	3o	3-	3+	3o	1+	21o	13	12	
29	0.6	1+	1o	2+	1o	2o	3+	3+	2+	17-	9	13	
30	0.8	2+	3-	3-	2+	2+	2o	4-	2+	20+	11	14	
												16	
												22	
												23	
Mean:	0.59									Mean:	11		

DAYS IN SOLAR ROTATION INTERVAL

ROT. =  
NR.

1774

Mch 4 5 10 15 20 25 30 Mch

1775

Mch 31 1 5 10 15 20 25 30 Apr

1776

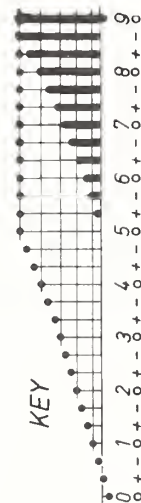
Apr 27 30 1 5 10 15 20 25 May

1777

May 24 25 30 1 5 10 15 20 25 Jun

1778

Jun 20 25 30 1 5 10 15 20 25 Jul



▲ = sudden  
commencement

# PLANETARY MAGNETIC THREE-HOUR-RANGE INDICES

Kp till 1963 June 30

(Ks from Wingst and Göttingen till July 17)

J.B.

COMMERCE - STANDARDS - BOULDER

CRPL RADIO PROPAGATION QUALITY FIGURES AND FORECASTS  
JUNE 1963

NORTH ATLANTIC

NORTH PACIFIC

JUNE 1963	NORTH ATLANTIC QUALITY FIGURES				SHORT-TERM FORECASTS HOUR IN ADVANCE OF				ADVANCE FORECASTS WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC Kp		ADVANCE FORECASTS WHOLE DAY, ISSUED IN ADVANCE BY	GEOMAGNETIC Kp							
	QUALITY FIGURES				HOUR IN ADVANCE OF				ADVANCE FORECASTS WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC Kp			ADVANCE FORECASTS WHOLE DAY, ISSUED IN ADVANCE BY		GEOMAGNETIC Kp					
	00	06	12	18	00	06	12	18	00	06	12	18		00	06	12	18	00	06	12	18
06 01	6+	5+	6+	6+	6	6	7	7	6+	6	6	6	3	3	7	7	3	2	2	2	2
02	60	6-	7-	7-	7	6	7	7	6+	6	6	6	3	2	7	7	3	2	2	2	2
03	7-	6-	6+	7-	6	6	7	7	6+	6	6	6	2	2	7	7	2	2	2	2	2
04	7-	6-	7-	7-	6	6	7	7	6+	6	6	6	2	1	7	7	2	2	2	2	2
05	7-	7-	6+	7-	7	6	7	7	7-	6	6	6	1	1	7	7	0	0	0	0	0
06	7-	7-	7-	6-	7	6	7	7	6+	6	6	6	1	3	7	7	0	3	2	2	2
07	50	40	6-	6-	5	4	6	6	50	7	7	7	(5)	3	7	7	6	2	2	2	2
08	60	6-	6-	60	6	5	6	6	60	6	6	6	2	3	6	6	6	3	3	3	3
09	60	50	6+	6+	6	6	6	7	60	6	6	6	2	2	6	6	6	2	2	2	2
10	7-	60	7-	7-	6	6	6	7	7-	6	6	6	2	2	6	6	6	2	2	2	2
11	6+	60	6+	7-	7	6	7	7	6+	6	6	6	2	2	7	7	2	1	1	1	1
12	6+	60	6+	6+	7	6	7	7	6+	6	6	6	2	1	7	7	2	2	2	2	2
13	6+	6+	6+	6+	6	6	7	7	6+	6	6	6	2	2	7	7	1	1	1	1	1
14	6+	6+	6+	6+	6	6	7	6	6+	6	6	6	2	2	7	7	1	1	1	1	1
15	6+	6-	7-	7-	6	6	6	6	6+	5	5	5	3	2	7	7	2	1	1	1	1
16	7-	60	7-	70	6	6	7	7	7-	5	5	5	1	1	7	7	0	1	1	1	1
17	7-	6+	6+	6+	7	6	7	7	7-	6	6	6	2	2	7	7	2	3	3	3	3
18	60	5-	6+	6-	6	5	6	6	6-	6	6	6	3	3	7	7	2	2	2	2	2
19	5+	6-	60	60	6	4	7	6	6-	6	6	6	3	2	7	7	(4)	2	2	2	2
20	60	60	6-	60	6	5	7	6	60	6	6	6	3	2	7	7	2	2	2	2	2
21	6+	60	6+	6+	6	6	7	6	6+	6	6	6	3	1	7	7	2	1	1	1	1
22	7-	6-	7-	6+	7	6	6	7	6+	7	7	7	2	1	7	7	2	0	0	0	0
23	7-	60	6+	7-	7	6	7	7	6+	6	6	6	2	2	7	7	1	2	2	2	2
24	7-	6+	7-	7-	6	6	6	6	7-	6	6	6	2	2	7	7	1	2	2	2	2
25	6-	50	7-	60	6	6	6	6	60	6	6	6	3	3	6	6	(4)	3	3	3	3
26	5-	4-	6-	6-	5	5	6	6	5-	6	6	6	(4)	3	6	6	(4)	2	2	2	2
27	50	50	60	6-	5	4	6	6	5+	5	5	5	(4)	3	5	5	(4)	3	3	3	3
28	6-	6-	60	6+	5	5	6	6	60	6	6	6	3	2	5	5	3	2	2	2	2
29	60	60	60	6+	6	6	6	6	60	6	6	6	2	3	6	6	2	2	2	2	2
30	60	6-	6-	6+	6	6	6	6	60	6	6	6	3	3	6	6	3	2	2	2	2
Score:	P	19	18	14	21	14	14	14	14	8	9			15	15						
	S	11	9	16	9	14	14	14	14	19	17			13	13						
	U	0	0	0	0	2	2	2	2	1	0			2	2						
	F	0	1	0	0	0	0	0	0	1	0			0	0						
Disturbed Periods:	P	0	1	0	0	0	0	0	0	0	0			0	0						
	S	0	1	0	0	0	0	0	0	0	1			0	0						
	U	0	0	0	0	0	0	0	0	0	0			0	0						
	F	0	0	0	0	0	0	0	0	0	1			0	0						



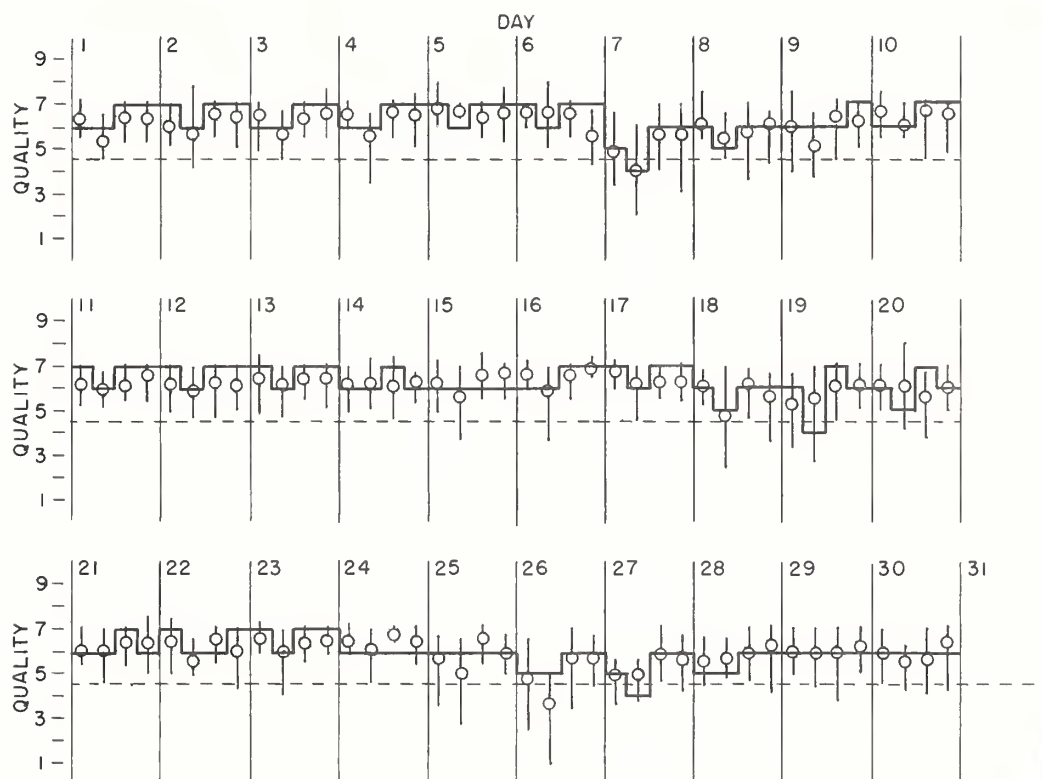
## NORTH ATLANTIC

JUNE 1963

— Short-term forecast

| Range of reports

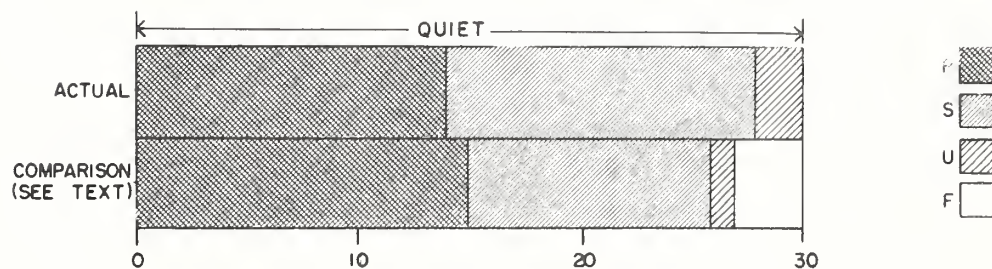
o Quality figure



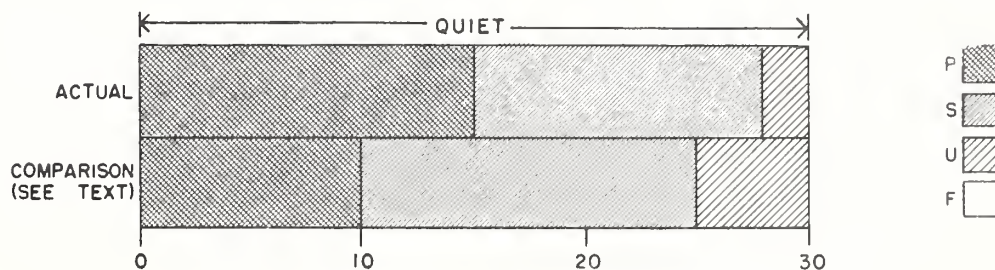
Outcome of advance forecasts--final estimates (1 to 7 days ahead)

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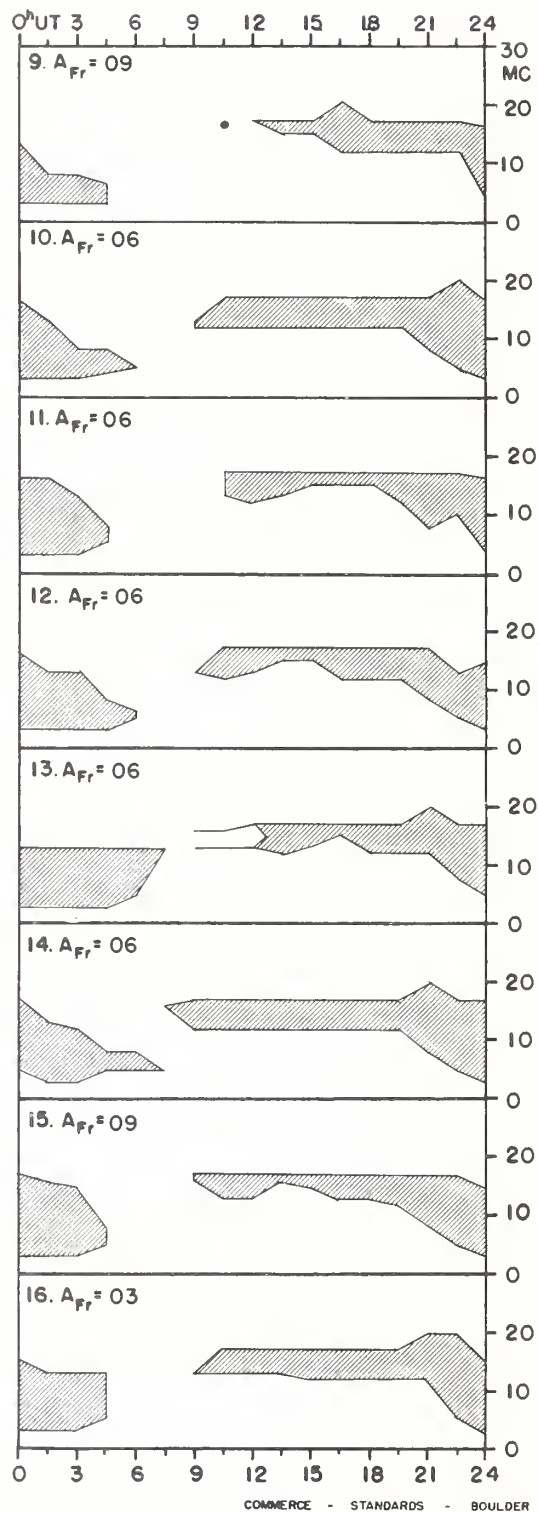
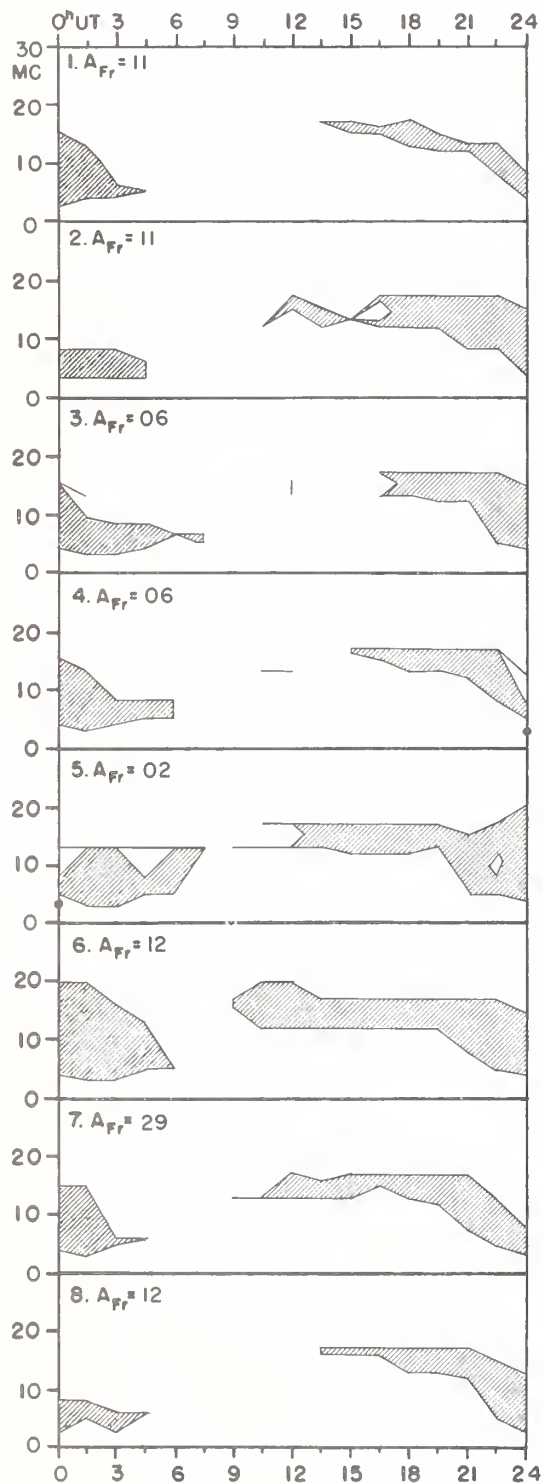
## NORTH ATLANTIC



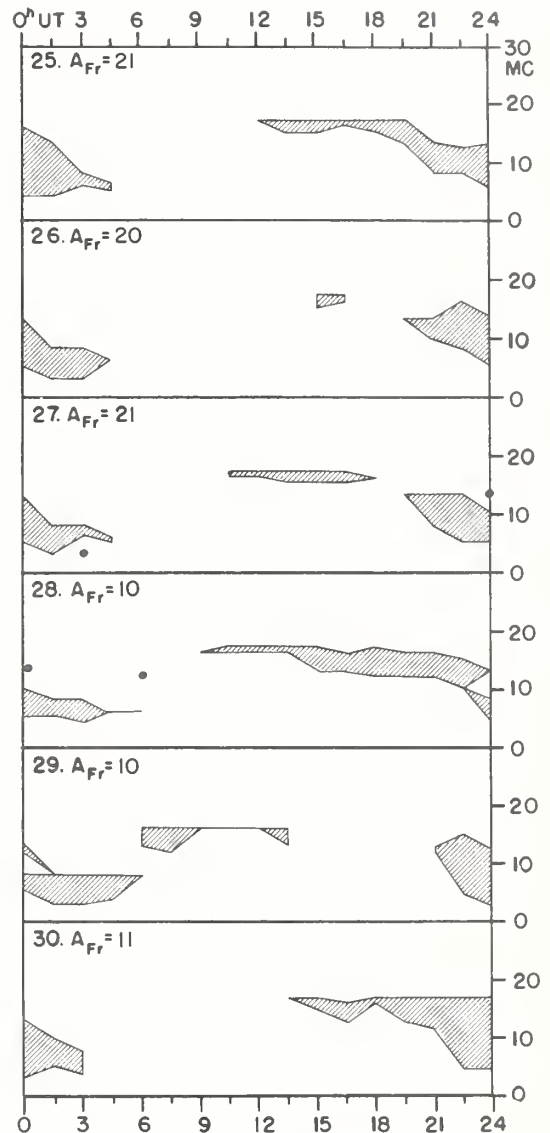
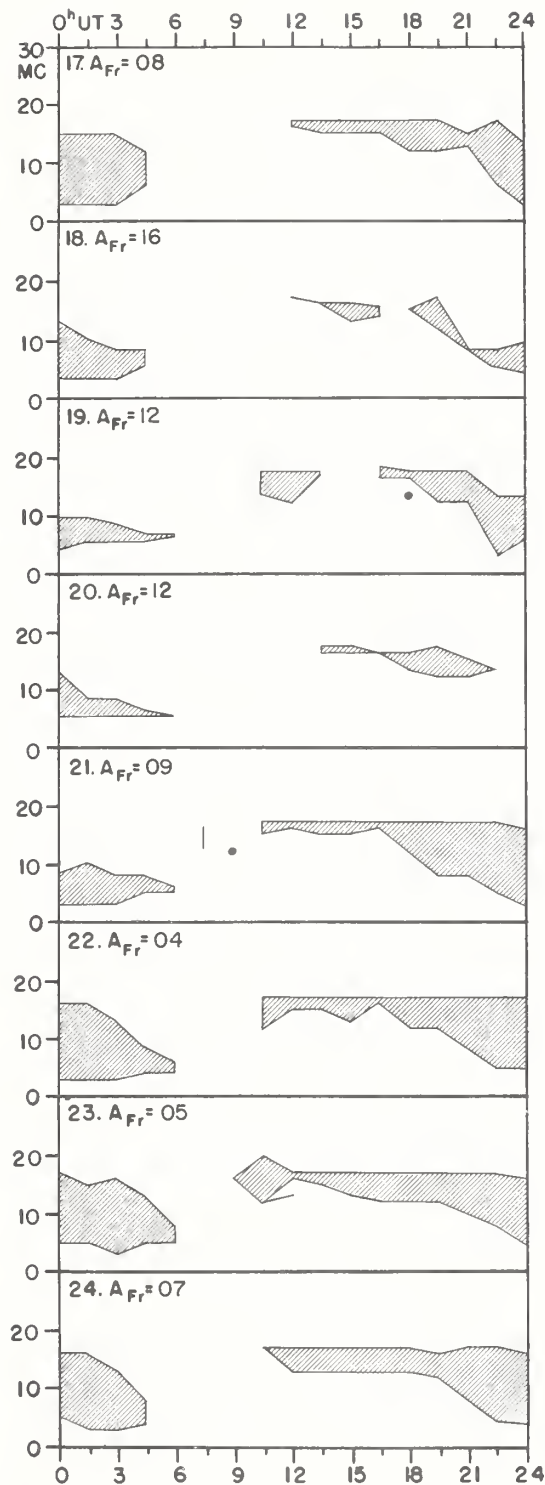
## NORTH PACIFIC



JUNE 1963



JUNE, 1963



COMMERCE - STANDARDS - BOULDER

Adapted from Observations by Deutsches Bundespost

VIIIa

ALERT PERIODS AND SPECIAL WORLD INTERVALS

INTERNATIONAL URSIGRAM  
AND WORLD DAYS SERVICE

JULY 1963

Issued July 1963 Day/Time U.T.	Advance Geophysical Alert	No.	World-Wide Geophysical Alert	Special World Intervals
30/0113	Climax, Solar Flare, One Plus, 29/1957Z			

COMMERCE - STANDARDS BOULDER



